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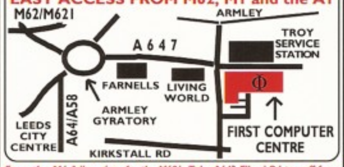
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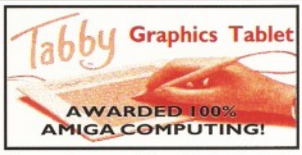
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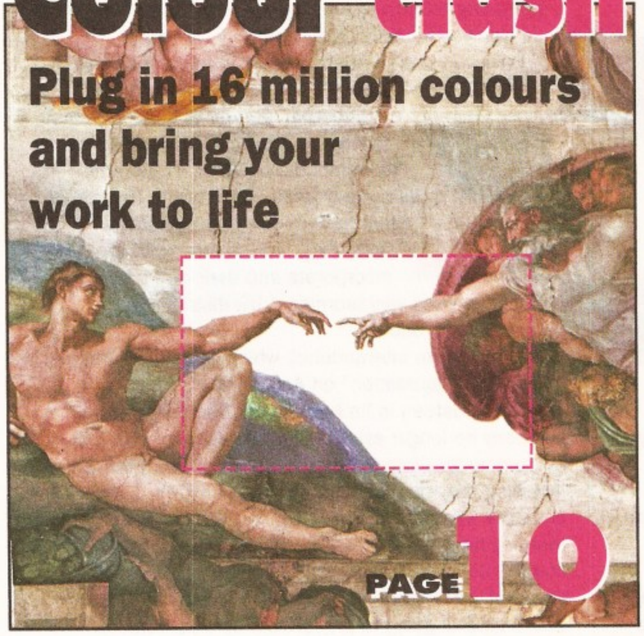
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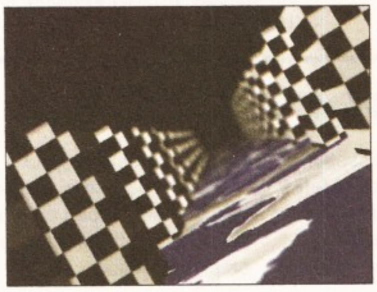


Welcome to Amiga Shopper! This magazine is dedicated to giving you, the serious Amiga user, the best. This is the magazine that reviews things in depth, as you can see from our Imagine review this month. When it comes to features, we have one simple rule: do it properly and in depth. When we look at a topic, we do it properly because we realise that what you, the serious Amiga user, need is facts. Not vague opinions or PR bumph, just the facts.

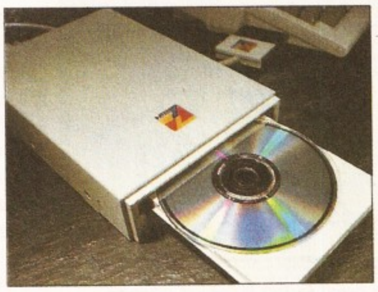
Richard Baguley
Editor

Colour clash





Has Imagine 3 been worth the wait? Check out our comprehensive review (with truly professional opinions) on page 20.



Will Indi's Zappo CD Drive steal the thunder from the forthcoming CD1200? Check it out on page 28

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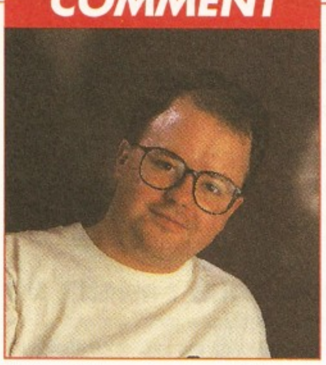
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Advance news on what we have in store for you in next month's issue.

AMIGA SHOPPER

Everything you'll ever need to get the best out of your Amiga

COMMENT



Richard B ponders over this month's Amiga events...

If, as appears likely, the Commodore management are successful with their bid for what is left of Commodore International, then we could be looking at a whole new ball game. The management of Commodore UK have proved that they are capable of marketing a product, as the success of the CD32 proves. Despite only having the sort of advertising budget that a company like Sega would use for buying teabags, CD32 software is now outselling all other CD formats. Not bad for a company that many people thought was on the way out, eh?

Of course, whoever now owns Commodore will have an uphill struggle. As we mentioned in last month's news, many of their most talented designers and engineers have moved on to new companies, so designing and producing new models is going to take a good few months, at least. The same is true for the AAA chipset, although this is apparently nearly completed. The next few months will be crucial, as they need to invest some serious money in marketing the Amiga and developing the next generation of Amigas. Will they pull it off? Unfortunately, we are going to have to wait and see...

COMMODORE UK IN MANAGEMENT BUY-OUT?

Commodore UK are organising a management buy-out of their liquidated parent. Can it succeed?

The management of Commodore UK, Commodore Germany and some ex-employees of Commodore US are involved in an attempted buy-out of Commodore International. This bid is rumoured to have been masterminded by several prominent managers in the UK, Canadian and Research and Development sections of Commodore. The money for this deal is apparently coming from several prominent merchant banks in the UK and US, and figures in the region of £100 million have been mentioned, although we were unable to clarify these figures at the time of going to press.

Although the details remain a little sketchy, it seems quite likely that this new company would actually be based in Commodore UK's Maidenhead offices, although the Research and Development wings will probably remain in the US as the greater part of Commodore's engineering expertise is currently based there. There are also several rumours circulating of another management buy-out lead by Jim Dionne (ex-President of Commodore US), although *Amiga Shopper* was unable to confirm or deny this rumour at the time of going to press.

The option of a properly organised management buy-out would probably offer the best overall solution to Commodore's current problems, as it would ensure the continuity of the Amiga line, and also that there will be an established R & D department to continue the development and production of new models.

This option would also mean that the currently stalled development work on the AAA chipset would probably be restarted fairly quickly. It would also mean that the new owners of Commodore could then get on with the business of turning the company around quickly, without having to wait for a new management team to get to know the company or the market.

Of course, any management buy-out would still be very much dependant on how much finance the new managers would be able to raise, and how much financial backing they would be able to put into R & D and marketing. Moving the entire operation of a company the size of Commodore is certainly not a cheap business, and restarting the manufacturing process would also require a significant capital investment.

However, there are still several other companies involved in the bidding process, and this still isn't completed. Several of the companies involved appear not to be planning to continue production of the Amiga in its current form. Some of the companies seem to be bidding purely for the technology, which they want to incorporate into their own products, including one very prominent US distributor of computer products.

Commodore International, which went into "ordered voluntary liquidation" on April 29th, is currently in the hands of trustees in its base in the Bahamas. As the company no longer exists, all of the staff once employed by Commodore International have now been released, including the company's Chairman Medhi Ali. A meeting of creditors was held on July 15th, but the results of this meeting have not yet been revealed. We attempted to contact Colin Proudfoot, Joint Managing Director of Commodore UK, but he declined to give a comment, and at the time of going to press, nobody else from Commodore UK was available to make a statement about the current situation.

A SNAP MAP FOR EVERY OCCASION

Volume II of Anti Gravity's *Snap Maps, Building Materials and Fabrics* collection has just been finished and will be available for $129.95. *Snap Maps* are a combination of 24-bit texture maps, bump maps and clipping paths. They can simulate very complicated objects that would otherwise be difficult to model.

Snap Map Volume I covered fields and foliage. *Volume II* will contain things such as fences, concrete and bricks. These maps will be very useful for creating urban scenes. *Snap Maps* can be used with almost any 3D program such as *LightWave, Imagine* and *Real 3D*. The pack also includes tutorial scenes to help you get started. Call Anti Gravity Products on ☎ 0101 310 393 6650 for details.

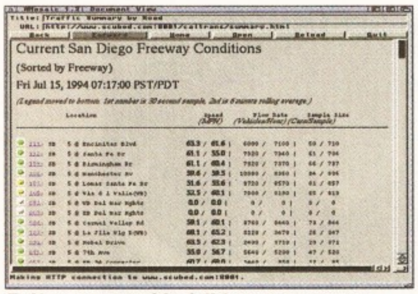
Jack into Cyberspace for free

If the Internet feature in issue 40 of *Amiga Shopper* (turn to page 60 for back issues if you missed it) left you drooling over the prospect of entering this world of electronic information, don't just drool, but contact ExNet. ExNet can provide full Internet access, and are currently offering a free one-month trial.

The company has a range of setups that should suit anyone from the casual hobbyist to the largest of companies. There are four main services on offer: the basic Service, UUCP, Full-Feed and live Internet.

The Basic Service is an account that provides USENET news services and E-mail. This service is aimed at individuals who are just starting out.

UUCP Service is the same as Basic Service, but includes high-speed automatic transfer of E-mail and news, and is targeted at intensive users, clubs and small businesses.



ExNet can provide full Internet access, and are currently offering a free trial.

Full-Feed Service provides the same facilities as UUCP plus unlimited transfer of data and your own unique E-mail domain. It's aimed at large businesses and BBSs. Live Internet Services will give you Telnet, FTP, Archie, Gopher and connections between your offices.

To obtain your free trial, or to find out more, call ExNet on ☎ 081 244 0077.

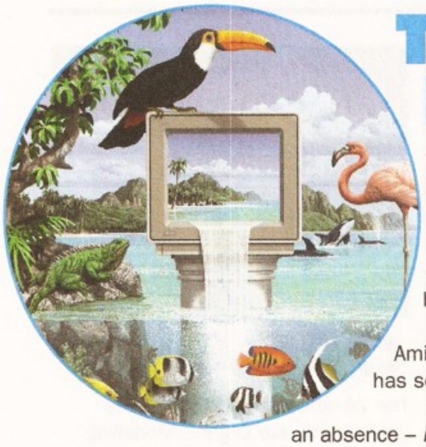
Could Pagestream 3 herald a new dawn for Amiga DTP?

Soft Logik are now confident that they will be able to finally release *PageStream 3* in early August. Indeed, by the time you read this, copies of the program may be on the way out to people who have already paid in advance. According to Michael Loader of Soft Logik: "...the manual will be sent to the printer in the first week of July. We expect a four week turnaround from the printer. In the past we have enjoyed a two week turnaround, but this manual is much longer (550+ pages) and is being printed out of state to reduce costs. When the manual is back from the printer, we will ship *PageStream 3*. We're as ready as we can be for the day the manual comes back from the printer and the program is done". Soft Logik also expect to have a demo version shortly which will be available on the Internet. Soft Logik are on ☎ 0101 314 894 8608



Soft Logic are now confident that they will be able to finally release Pagestream 3 in early August.

TWICE AS BRILLIANT



Meridian Software Distribution are offering *Brilliance 2* at the incredible price of £43.48 (£39.99 + £3.50 P&P). This offer is open until the 31st of October 1994, when the price will be raised £89.95.

Brilliance is regarded by many as the Amiga's premiere paint package. Version 2 has several new options and tools.

The most noticeable change is actually an absence – *Brilliance* no longer has a dongle. This is great news for people who have other programs that use dongles.

You can also magnify a new zoom true-view mode. This provides a clearer view that will aid in editing magnified HAM images.

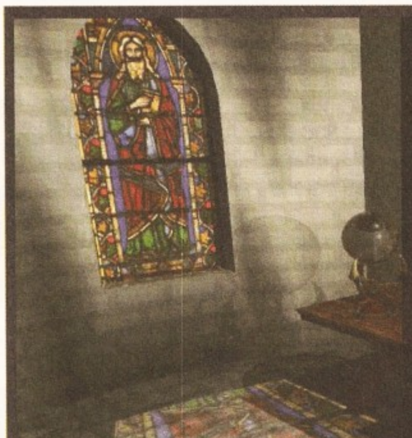
Brilliance 2 has a new Rub Thru tool. You can use this function when you have two images in different buffers to 'rub thru' areas of one buffer to another. This can be used to produce some eye-catching images.

There are loads of other functions too; like a flip book, an animation presentation mode, improvements to tweening, and you can now load any image, including HAM ones, into the registered version of *Brilliance*.

For information about *Brilliance's* features, read our review in issue 38. Contact Meridian on ☎ 081 543 3500 to order your copy.

Even More ProText

Arnor have announced an upgrade to their popular word processor *Protext* (which came second in our comprehensive round-up in our July issue). Version 6.5 adds a number of new features, including a graphical print preview, so you can see what your pages are going to look like before they are printed. Auto-correction has also been added, so the program will automatically correct spelling and capitalisation errors as you type. You can also set up your own table of abbreviations, and the program will automatically expand these as you type. PCX, GIF and IMG files can also be imported and displayed on screen, as well as normal Amiga IFF files. The upgrade will cost £35.25 (from version 6) or £47 (from version 5.5). Arnor are on ☎ 0733 68909.



PD Please

Almathera have just launched volume 4 of their immensely successful CDPD series of CD-ROMs at a price of £19.99. This disc is absolutely filled with loads of useful stuff. Volume 4 will include all of the Fred Fish disks from number 891 to 1000. The GNU C/C++ Compiler has been included, complete with OS 3.0 includes. CDPD 4 also contains the complete AM/FM Music Magazine collection, as well as the special and pro-sample disks.

The disc has plenty of images, fonts and other utilities, but it also has extensive support for networking. Regardless if you are using a Parnetted CDTV, a serial-linked CD32, or even just an expanded CD32, you will be able to access all of the files easily thanks to the careful organisation of the disk- and networking-support.

Speaking of networking, Almathera are also supplying an Enhanced Serial Adaptor kit for the CD32. This package includes CDPD 4, a CD32 serial adaptor, Null-modem cable, and the TurboSernet floppy disk. The Serial Adaptor Kit costs £39.95 for the enhanced version and £29.95 for the original version (the original version is supplied with CDPD 1). Almathera can be contacted on ☎ 081 687 0040.

Demonic prices

In last month's Internet feature we said that the joining fee for the Demon Internet service is £12. This price is correct, but it does not include VAT. Demon are also now working on some software to install and configure the AmiTCP software we referred to in the feature, as well as setting up the newsreader and other bits associated with Internet access. Demon are on ☎ 081 349 0063.

Grubby CDs

RSD connections are now marketing the Bundee CD3 CD repair system, which was apparently an offshoot of the Strategic Defence Initiative (*Star Wars*) program. This product apparently both cleans and repairs disks by using an advanced optical filler to fill in any scratches on the surface of the disk. A fine film then covers the surface of the disk, giving protection from any further damage. The kit can treat up to fifty disks. Bundee CD3 costs £14.95 and RSD Connections are on ☎ 0992 584205.

Get Alive

What the organisers claim will be "the most exciting consumer electronics event ever" will be held at Earls Court from the 20th to the 25th September. Live 94 will include exhibitors from every branch of consumer electronics. You can even meet Capital Radio's top DJs. Hooray! The organisers (News International Exhibitions) are on ☎ 071 782 6893.

36-bits of Toast

Alpha Paint is a new professional 36-bit paint package for the Video Toaster. It makes extensive use of a full 12-bit alpha channel for compositing, anti-aliasing and blending images. It also has some powerful image enhancing and masking abilities. Contact InnoVison Technology on ☎ 0101 510 638 8432, for more details.

Eye protection

Computer Optics are selling a range of eye-wear products, helping to protect your eyes when using the monitor for long periods. Two versions are available: the spectacles (£32.99) and the clip-ons (£29.99). To order, send a cheque or Postal Order to GEPRO Co. (Dept 59), 132 Heathfield Road, Keston, Kent BR2 6BA.

Time for a quickie

First Computer Centre are now selling Quicknet, a new networking system which allows Amigas to share hard disks and other resources, such as printers. The system also allows the use of diskless workstations, as computers can be set up to boot up from remote hard disks. First claim a pretty respectable data transfer speed of 400K per second. A Sana II driver for the system is also being developed, so it could be tied into existing Envoy or TCP/IP networks. First Computer Centre are on ☎ 0532 319444.

Data complaints

Last year the Data Protection Registrar received 2,889 complaints. Most of these were from individuals who felt that financial information had been released to unauthorised third parties by companies such as banks and building societies. Many complaints were also received about the Child Support Agency and credit reference agencies, although both had made improvements in their procedures, leading to a fall in the number of complaints since last year.

The BBC's Big Bash

The BBC's Big Bash is an exhibition that is aimed specifically at children between the ages of 7 and 14 years. Amongst other events, the exhibition will have an area called *Future World*. This aims to introduce children to various aspects of the latest developments in technology, including computer hardware and software. Tickets will cost £6 for children and £8 for adults – they can be purchased from the ticket hot-line on ☎ 071-323 3003.

Backup for less

Intelligent Designs Inc. are offering reduced rate upgrades to its *Ami-Back* line of products from any version of *Quarterback* or *Quarterback Tools*. This competitive upgrade gives *Quarterback*-owners the chance to regain some of the software support that was lost when *Quarterback's* manufacturer went out of business. To find out how to get your upgrade call IDI on ☎ 0101 407 894 1031

Jay Miner Dies

Jay Miner, one of the fathers of the Amiga, died in El Camino Hospital on June 20th as a result of heart failure caused by kidney problems. Jay was widely regarded as the father of the Amiga, and was one of the original team which designed the machine in the early 1980s. Prior to this, he had worked for Atari on the design of the Atari 800, but had resigned when they decided not to develop a real 16-bit machine. He then moved over to a company called Hi Toro (later called Amiga) to work on the design of a 16-bit games machine which could be expanded into a proper computer. "There were a lot of arguments, and the way most were sorted out was by hitting each other with foam baseball bats" he said in an interview in 1992. Eventually they produced a prototype, although it was somewhat jury-rigged. "The first Agnus was three lots of eight bread boards, each with 250 Chips, and this was repeated for the other two custom Chips", Jay recalled. This was shown behind closed doors at the 1983 CES (Consumer Electronics Show) in Las Vegas. People were amazed by the bouncing ball demo, which included both animated graphics and sampled sound. Although they were nearly bought out by Atari, the company was finally purchased by Commodore... and the rest is history.

Jay left Commodore when they tried to move the design team to the Philadelphia offices, but he always retained a fatherly interest in the Amiga, and was the Co-Sysop of an Amiga Bulletin Board system in Los Angeles.

When his death was announced on the Internet, many people told stories of how they had known and respected Jay. One message in particular summed up most people feelings about Jay – "Back in '87 or '88, Jay came up to speak to our user group. It was a packed house, and he gave a very interesting talk that lasted some time. At the end of it, he announced, somewhat apologetically, that he had to catch a late flight back to the Bay Area and, therefore, couldn't stick around to answer questions. We didn't think his request was all that unusual, until we found out, some time later, that he had had another flare-up of his lifelong kidney problems earlier that day, and flew home to be met at the airport by an ambulance, which took him to the hospital for immediate emergency surgery.

I can't think of one person out of a million who wouldn't have cancelled our meeting and either flown home immediately or checked into a hospital here. No one could have possibly blamed him for so doing. But he put up with everything, just to be able to make a user group meeting. You'll be missed, Jay!. – James David Walley".

Humans with attitude



If you enjoyed the review of *Humanoid* in issue 40, but were discouraged by its price, you may find a new set of human figures from Kyte Products equally interesting. These 3D objects are saved in *Imagine's* file format, but they may also consider converting the objects to *Lightwave's* format, if the stand-alone version becomes popular. Compared with the *Humanoid* models, this collection is very cheap at £35.

There are six models in all: three versions of the male model, and three of the female. They vary in their complexity – the Low-density models have about 1,500 points each, Medium-density 2,500, and High-density 4,500.

The real story behind this, though, is that to create their model collection Kyte built their own 3D scanner. The scanner takes in information from an object as it spins. This means that any object small enough to fit on the scanner can be turned into an *Imagine* model. The humans that were digitised where actually made of Plasticine. Obviously this provides great scope for obtaining organic-looking models.

Human collection of objects will be available within the next couple of months, with more collections to follow. If you would like to know more about this project and what other models will soon be available, call Kyte Products on ☎ 0272 400805.



ORGANIC

The 24-bit club will be selling the book "Lightwave Organic Modelling" by David Duberman for £26.90 incl. P&P. The book covers the modelling of organic objects in *Lightwave*. They are also putting the finishing touches to "The Lightwave Collection", a selection of textures and objects for use with *Lightwave*. Each volume of this collection will cost £29.95, and will be composed of ten disks. The 24-bit club are at 6 Sirska Square, Floor 1, Glasgow G23 5DW.

Micro R.&D. in Transition

Transition is a new professional graphic file conversion program (from Micro R & D) that costs $39. It can handle all of the most popular file formats from most computers, such as JPEG, IFF, BMP, PCX, GIF etc.

But,where it differs from most other conversion programs is that it can perform batch conversion. This is actually built into the program, so you don't have to rely on AREXX. The program also has some processing abilities as well, and has been described as a bit of a "poor man's ADPRO".

Micro R.&D. are launching two CD-ROMs as well. The first one is due out this month and will include *Transition*. It will also include 79 professionally created *Lightwave* objects, as well as several PD models. The disc has 500 fonts in Postscript and CompuGraphic formats as well. It will also contain 1300 EPS drawings and images in IFF and GIF formats. If that wasn't enough, there are also several games, utilities and sounds.

The second disc will concentrate mainly on images. It will have the complete six volume set of *Nature's Backdrop* from Infinite Solutions. Each volume has 12 main images and several brushes and covers surfaces such paper, marble and metal. The disc also includes a large selection of NASA images, so there will be plenty of photographs of nebulae, moons and galaxies.

Look out for a review of the CD-ROMs and *Transition* in *Amiga Shopper*. Call Micro R & D on ☎ 0101 308 745 1243.





The latest news from R Shamms Mortier – our man in the US.

NewTek on parade

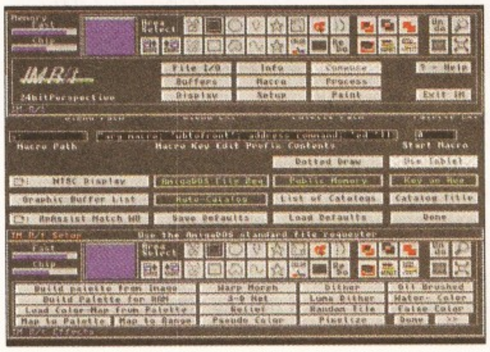
NewTek vows that as far as *LightWave* is concerned, the European market will no longer have to feel like second class world citizens. The "stand-alone" version of *LightWave* (version 3.5) is promised to ship by mid-July in both PAL and NTSC flavours. My contact gave me the full description of what is involved. The price will be $99 as an upgrade (for Toaster 3.0 owners) and $695 for new users. No word on any copy protecting scheme. It will be bundled with a new manual, a detailed video tape, and will require a system with at least 8Mb and a 68030+ (no accelerator needed) to run. It will address resolutions in Amiga 24-bit IFF, 24-bit RAW, 24-bit TARGA, HAM, HAM-8, 8- and 24-bit Alpha output, and the Picasso board. Why not the other 24-bit boards like the Retina, OpalVision, FireCracker, etc.? What this will do to LightRave (the *LightWave* emulator) owners is anyone's guess.

There are no plans at this time as far as releasing a new *ToasterPaint* upgrade, paving the way for Toaster users to purchase the new Innovision AlphaPaint product. What about a full PAL Toaster? NewTek denies development, but I understand from my sources that an SGI and other versions are already prototyped, meaning that a PAL version can't be too much of a fantasy. When? Who knows, but NewTek is very savvy about marketing and making profits, so if it is seen that the PAL market continues to salivate over Toaster ownership, expect NewTek to reply in the not too distant future.

As for the Commodore mystery play, NewTek says "Commodore is not stopping us. We are optimistic about the future and the Amiga. No matter what, however, NewTek will not disappear from the scene." **NewTek ☎ 0101 800 8438934**

FURIOUS BATTLES

It is said that even in times of peace, there are always at least a dozen wars going on, and this is certainly true as far as Amiga developers are concerned. Among specific conflicts (which sometimes get very very nasty when one taps into the language offered on-line at night) are the following: a furious battle between Digital Creations and Electronic Arts over who is to assume the lead as a 2D paint program developer... *Brilliance* or *DPaint*; a three part battle over image processing software kingship, engaged in by ASDG (*ADPro* software), BlackBelt Systems (*ImageMasterRT*), and Nova Design (*ImageFX*). These last three companies seem to have a special distaste for each other, as the language on-line is all but slanderous, with no humour intended. A skirmish is also in the works between NewTek (ToasterPaint rewrite) and Innovision Technology (the creators of the July release of *AlphaPaint*, a *ToasterPaint* replacement). A looming world class conflict will pit the supporters of the new Warp System (U.S.Cybernetics) supporters against all of those reticent individuals who refused to port to the new acceleration system. Fangs are being bared all around for jugular thrusts.



ImageMaster RT engaged in a battle over image processing kingship.

WARP AWAY

I'm going to be telling you a lot of news in the near future about the evolutionary Warp System from U.S. Cybernetics (with a good chance of a very informative interview with Ron Henry, U.S.C.'s president and creator). *Aladdin-4D* is the first program that has been totally re-coded to run on that system, with *Real-3D* very close to the same condition (speeding up rendering on all re-coded software at from 200 per cent to no upward limit). Release will be in the fall if not before. More then that is the release of U.S.C.'s "LightEngine", also due out before fall, that will render at the same speeds while addressing 3D files from *LightWave*, *Imagine*, and SoftImage (*WaveFront*). This will make the Amiga a challenger to the Silicon Graphics Workstations at a fraction of the comparative cost. Ron Henry's quote is very funny..."won't it be funny when the industry sees us doing supercomputing on a 'dead platform'". In a secret and furious three-week programming marathon, *Aladdin-4D* (ADSPEC Programming) has been completely rewritten so that a special version of it will work with the U.S. Cybernetics' Warp System hardware (true parallel processing). Benchmark tests were performed in Vancouver in late June, and with only one system board (out of a possible infinite upward limit), this already fast 3D software ran at 2x the speed in complex renders! **U.S. Cybernetics ☎ 0101 800 292 5001**

DIGITAL CREATIONS ON THE WAR PATH

Digital Creations has removed all security key ("dongle") protection from their *Brilliance 2D* paint software for its 2.0 release. They've also dropped the price from $249 to a minuscule $99. Why have they done these things? Greg at DC says it's meant to "blow Electronic Arts' *DPaint* out of the picture!" (especially with the projected autumn release of *DPaint 5*). He also said that if removing the security key means that pirates will post the software as a freebee on the various pirate BBS systems, Digital Creations will stop any future development on the Amiga. This includes any future development on *DCTV Paint.* So if you know a *Brilliance* pirate (or any software pirate at all), give them a serious taking to. In my estimation, software pirates are responsible for untold damage, and should be publicly caned.

NOVA DESIGN ON THEIR OWN

Very soon now (August) you will see the Image Processing program we previewed for you a few issues ago, *ImageFX 2.0*, on your shelves. When you do, you will discover that the developers (Nova Design) have separated from their previous distributor, Great Valley Products. GVP has gone through serious "downsizing" in the last months. They're still in the Amiga market with their accelerators and 24-bit boards, but have dropped most of their software line. Nova Design is anxious to become recognised for its own efforts without GVP's help. And just think, GVP is reported to once have stated that they wanted to assume control over every aspect of Amiga development... **Nova Design ☎ 0101 804 353 0225**

More Mike

After having interviewed the acerbic Mike Halvorson of Impulse Inc. (the makers of *Imagine*) in issue 40 of *Amiga Shopper*, I had the opportunity to listen to his opinions again in late June. I was really calling about obtaining one of the new Impulse 3D digitizers (which is being offered at a special introductory price of $500). After learning that the digitizer wouldn't be released until very late July, we started taking about other matters. One was his gleeful acceptance of Commodore's demise, and his fury over the coming release of the U.S. Cybernetics' Warp System boards. Stay tuned for further developments on this one next issue.

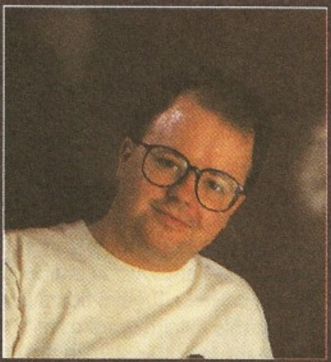
Postscript for Video

Innovision have released their Postscript module which allows you to convert any PostScript font for use in their *Montage* software. It's an economical way to get true broadcast quality fonts from your existing PostScript font file resources.

The Opal Files

The Opalvision add-ons are about to go out in preliminary R&D form to "major sites" in July. Centaur biggies told me that "it doesn't matter what has happened to Commodore, we still have to get our products out because our market is still anticipating their release".

Desperately seeking...



The moral of this month's story from Ed – Mr Wisdom himself: "...Sometimes a problem is too close to be seen properly. The best way to get around it is to stand back and look at it in a new light".

Before I worked for Future publishing I was a telephone support person. This involved solving problems with people's computers over the phone, and attempting to solve them without ever seeing the actual computer. As you can imagine, this was somewhat difficult at times. One particular call springs to mind.

A customer rang up complaining that a report they were expecting had not come out. They had checked everything and even called in their Data Processing manager, who oversaw the running of the computer, and he hadn't been able to find any problems. I checked the usual things, but everything seemed to be in order. I asked them to run the program again, but there still was no report. I then got them to check the printer. Was it on-line? Were all the correct lines on? Was the printer cable in correctly? The answer to all of these questions was an infuriating yes. So what was the problem?

In desperation, I asked the customer to go and look at the printer, just to check that everything was *really* OK with it. They did so, and after a couple of minutes of silence there was a sudden burst of laughter. The customer came back and told me that they had worked out what the problem was, but they weren't going to tell me because it was too embarrassing. I persuaded themto tell me, and it turned out that there was no paper in the printer.

No names, no pack drill, but a certain Data Processing manager from a reasonably well-known company somewhere in north-west England knows which company it was.

So what is the moral of this story? It's quite simple really. Sometimes a problem is too close to be seen properly. The best way to get around it is to stand back and look at it in a new light. Alternatively, get somebody else to look at it for you. The answer may be simpler than you think...

...which brings me handily on to the subject of debugging. Tracking down the bugs and problems in a program is one of the major causes of grief and premature hair-loss in a programmer's life. However, it doesn't have to be this way. There are a few simple techniques which can make it a lot easier... and who better to tell you exactly how than Toby Simpson, lead programmer at noted games company Millenium Interactive? See page 16 for Toby's article.

Yes, yes, I know. You were all geared up for a full, in-depth review of *Lightwave 3D Standalone* and it cannot be found in this issue. Sorry about that. The simple truth of the matter is that at the time of writing *Lightwave* still hasn't arrived, and, unlike some other magazines, I'm not prepared to review a product after only having seen it for a couple of days. Apparently, programmer Allen Hastings is adding some new functions to it, so the version released will be 3.5, not the 3.2 version everybody expected. We don't have precise details of what these new functions will be, but please rest assured that we will bring you a full, in-depth review of what is possibly the best raytracing program on *any* platform just as soon as we get hold of the finished version.

Join the Family

As you may know, Future publishing also publish two other fine Amiga magazines: *Amiga Format* and *Amiga Power*. Here's Steve Jarrat, Editor of *Amiga Format* to tell you what they have in store for you this month:

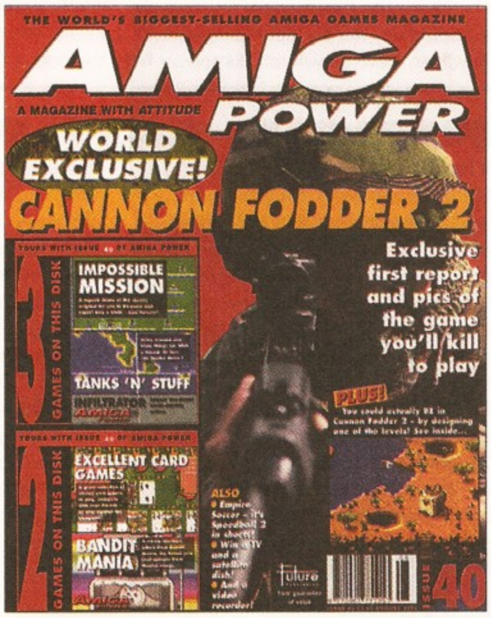


"*Amiga Format* continues to provide the best of both worlds for serious and, er, not-so-serious Amiga users. On the Coverdisks this month we have *OctaMED Pro 5.0* – the stunning do-it-all music package. And on the other disk (yes, there are two) we have a very large and very playable demo of *Detroit* – a cross between *Theme Park* and *Top Gear*. Inside the mag we have the first review of MicroBotics' SX-1 expansion module that turns the CD32 into a CD-A1200; and the definitive rating of Indi Direct's Zappo CD-drive. We also delve into the future world of interactive TV – and explain how the Amiga could be a major payer in what promises to be the biggest communication revolution since Talking Pages. *Amiga Format* issue 62 – the best one so far... "

***Amiga Power* is a magazine for the games player. The Editor (Jonathan Davies) tells it all:**

"Be in *Cannon Fodder 2*" – that's the thrilling offer open to readers of the August issue of *Amiga Power*. All you've got to do is design a level for the sequel to one of the best games ever and, if it's good enough, it'll appear in the finished product. To help you, we've shown just how Sensible Software are putting the game together, along with some exclusive screenshots of the first few levels.

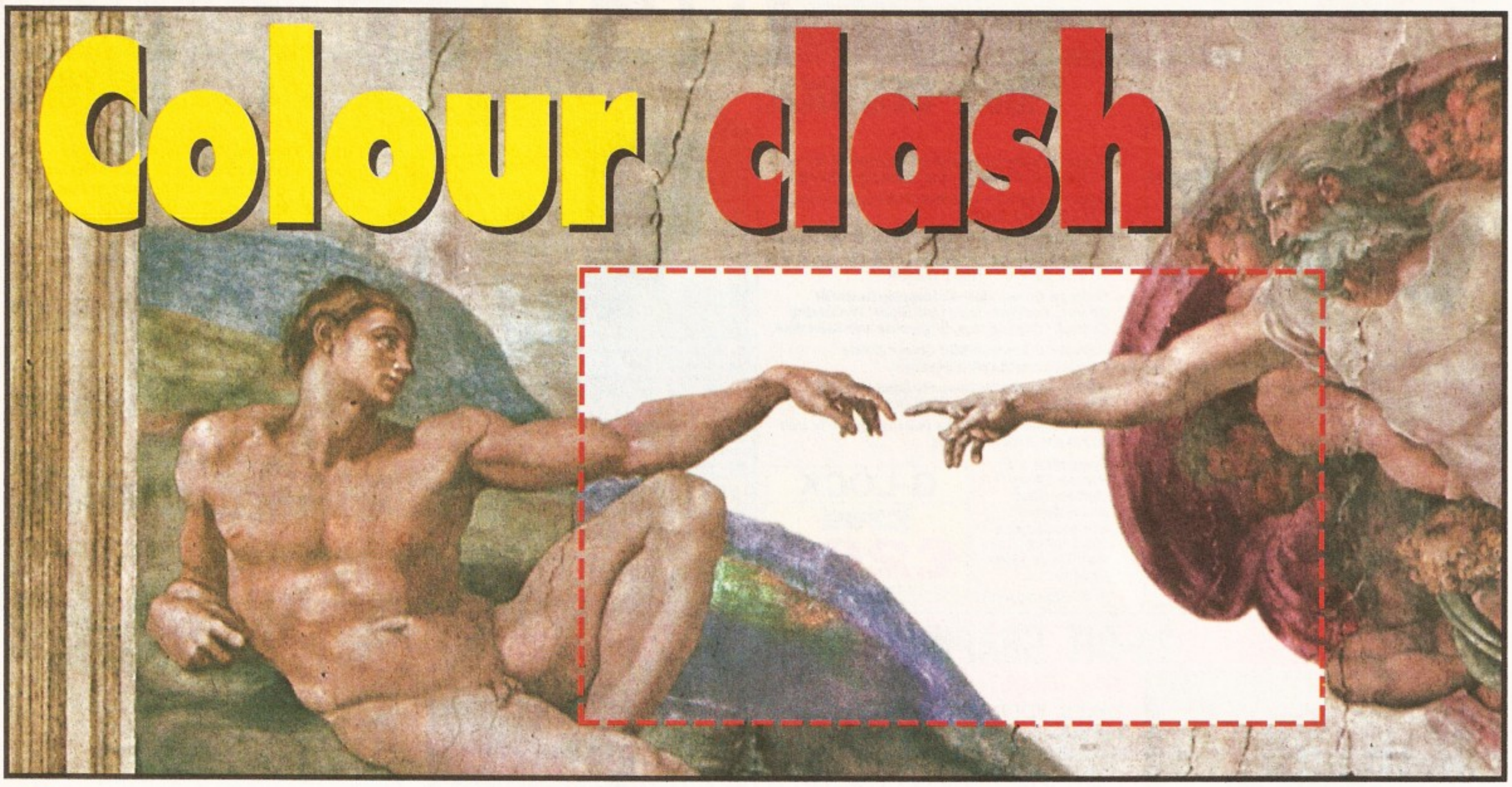
Then, of course, there are our coverdisks. As usual, there are two of them, and they're stuffed with great games – probably the best of which is a



demo of the original Commodore 64 game *Impossible Mission*.

There are loads of reviews, including *Bubble and Squeak*, *Bump 'n' Burn* and *Empire Soccer*, tonnes of playing tips and a chance to meet the Four Cyclists of the *Apocalypse*. Basically, it's truly great and at £3.95, including the two disks, it is the ideal companion if you like playing games. On your Amiga."

Colour clash



Plug in a 24-bit graphics card and watch your Amiga art come to life. John Kennedy rates the options available to you.

Some people are never quite satisfied, are they? No sooner than the Amiga gaining the multicoloured AGA chipset does everyone with a 'big box' Amiga start hankering after true colour, 24-bit graphics. It might seem that fitting a graphics card is only an excuse to go one better than the Jones's A1200, but the advantages of having a pure 24-bit display are both obvious and subtle.

Straight away the ability to view images in 16 million distinct colours can revolutionise the way in which you use Amiga graphics. This is especially true if you have had to make do with non-AGA HAM mode or 16 colours in high resolution on a A2000 or A3000. In this respect a video card is like having a new computer.

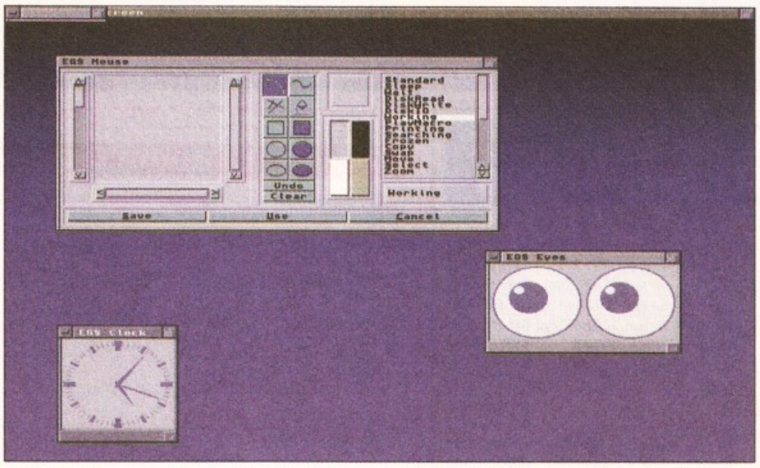
Most graphics cards will also have a darn good attempt on emulating the Workbench, which means your main work environment is suddenly updated to near graphic workstation quality. In fact, the move from a four colour, 640 by 256 display to a 256 colour, 800 by 600 display is sometimes better than getting a new computer, as you still have all the software and ease-of-use you have got used to. Most of these cards also have a good SVGA quality output (not surprising really when you check the chips on them), which means no messing around with relatively expensive and tricky-to-find multisyncs. Any cheap (about £150) SVGA monitor will deliver sharp, clear flicker-free images good enough to give the Amiga a new lease of life.

The subtle differences really start to surface if you are a big fan of graphics. If you like using *Art Department* or other image manipulation programs, you are in for a very pleasant surprise – everything is a lot quicker. It has nothing to do with on-board blitters or Chip memory access, it's simply that the software doesn't have to mess around calculating a palette. It isn't necessary to pick the best 256 colours, or use a complicated dithering HAM algorithm – the images are stored in 24-bits internally, and they are displayed in 24-bits externally. The time taken to display the image is the time taken to copy the graphics data from the Amiga's own memory to the memory on the graphics card, and that is usually pretty fast.

For example, the Retina card comes with an excellent animation program which can display pictures incredibly quickly, even directly from hard drive. When displayed in the true colour mode, they look superb and because of their 'chunky' format they can be animated much faster than HAM-8. This is one of the reasons why even Amigas with AGA chipsets benefit from a graphics card.

INSIDE A GRAPHICS CARD

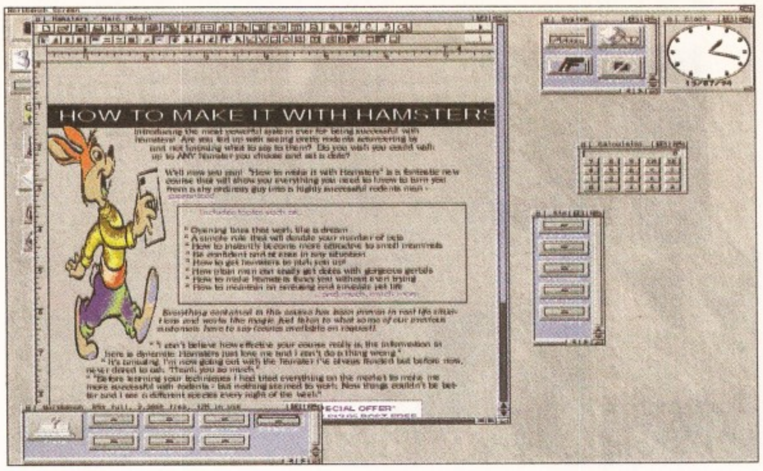
The main component of any graphics card is the Chip responsible for generating the video signal. Normally this is a Chip which has been developed for the IBM-PC clone world, which has the advantage of being easy to get hold of and therefore rather cheap. The disadvantage is that the Chip is designed to work with a processor



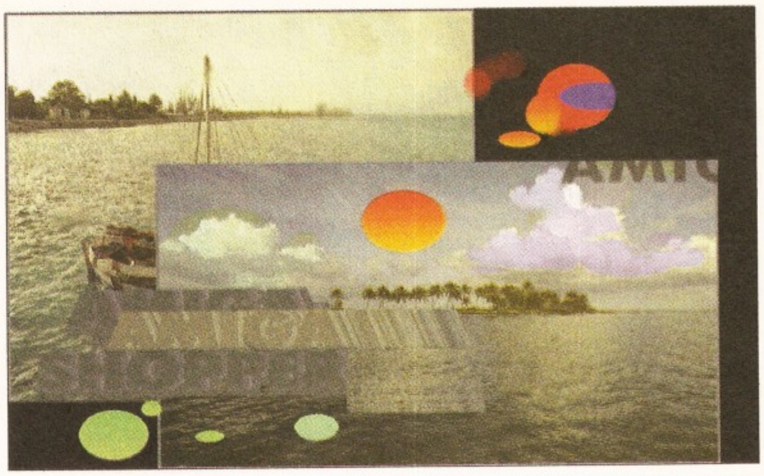
The Rainbow card supports the EGS standard, which basically means it can run its very own version of Workbench.



With the EGS standard, TVPaint2.0 runs quickly on the Rainbow. The high-speed video RAM and INMOS graphics chip makes this the fastest card.



Retina will open a huge 800 by 600 Workbench display, which can be put to great use by most programs which support the Screen Display Database, present from Workbench 2.04 and greater.



It hasn't got a very catchy name, but VDPaint deserves your attention. It's a very powerful, 24-bit paint package which comes close to TV Paint in terms of features, speed and ease of use.

24-BIT GRAPHICS

The Amiga 4000 (and A1200 and CD32) feature the AGA graphics chipset, which is capable of opening Workbench screens in 256 different colours, and displaying images in a special HAM-8 which allows over 262,000 different colours on screen.

However, a graphics card works in a different way from Amiga graphics – a more chunky way. Normally the Amiga uses bitplanes to store the different pens used at a particular point on the screen. The more bitplanes, the greater the number of pens can be specified, and with 8-bit planes there can be up to 256 different pens in use. Each pen can then be set to be of any 1 from 16 million different colours, by means of a palette or 'colour look-up table'.

Graphics cards work differently. They are designed to expect 24 bits per pixel, so they don't worry about varying numbers of bitplanes. Instead each pixel (which use 24 bits, or 3 bytes) is in itself a colour, rather than a reference to a palette entry. Each byte defines the intensity of a primary colour (RGB) which makes 256 by 256 by 246 different shades – over 16 million.

The great advantage of this method is that each pixel on the screen can be a totally different colour. It also makes some graphic techniques (texture mapping, for example) a lot quicker, which is what makes games like *Doom* much more feasible on a PC than an Amiga.

which is completely alien in many respects, and getting it to communicate with the Motorola processor inside the Amiga is a difficult task.

The graphics card will also need to provide some memory in which the graphics Chip will keep the image. The amount of memory is usually either 1Mb or 2Mb, and can be optional. The memory is usually quite expensive as it must be very fast, and it is usually possible to upgrade the amount present. With about 2Mb of video RAM, it is possible to double-buffer the images which can make animations a great deal smoother. Whether or not the card is a true Zorro III card can also make a difference to speed.

There may be extra Chips on the graphics card, such as a blitter which can move graphics around very quickly. Some cards will also support hardware sprites which can be used to produce a mouse pointer. This will also speed things up somewhat.

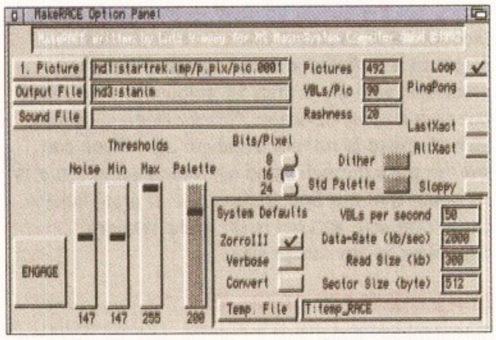
An advanced card may may provide several outputs – not only RGB for a monitor, but also a video signal which can be used to produce images suitable for recording on to video tape. Some cards may offer a form of expansion, by allowing video digitisers, special effects chips or genlocks to be connected directly to the card.

The final part of the graphics card is one of the most important – the software. It used to be that getting a static picture out of a card was a cause for celebration, but that simply won't cut it these days.

The ideal card is one which can be dropped into the Amiga system and will work almost invisibly. A good card will provide a good degree of Workbench emulation, and in a perfect world only one monitor will be required. Although the official Commodore Retargetable Graphics project is on indefinite hold, there are other ways of getting Amiga software to take advantage of new video cards. The EGS (Enhanced Graphics System) provides a completely new Workbench, complete with some very enhanced features. Unfortunately the software which runs under the EGS isn't widely available, but getting hold of the details to write your own isn't difficult if this is your thing (check out the Aminet CD-ROM or Internet site for details).

USING A 24-BIT GRAPHICS CARD

Depending on specification, there are three ways of



Race is the animation creation software included with the Retina. The amount of colours and noise can be controlled to balance the amount of memory the animation consumes, the playback speed and the specifications of your computer.

using a 24-bit card card. Firstly, you can run the new EGS Workbench system on it. The EGS includes a complete set of Amiga-like Preference programs, as well as some utility programs (screen blankers, image viewers, mouse pointer editors) and a paint program called *SpectraPaint*.

Unfortunately, this is about as far as the EGS systems goes at the moment, as there is currently very little incentive for developers to create both Amiga and EGS versions of their software. This is a shame, as the EGS system offers several advanced features, such as tear-off menus and a generally more sophisticated environment. *TVPaint2* is one of the programs which does support EGS.

Secondly, the card can be used as a replacement for the graphics built in as standard to the Amiga. That is, the Workbench and most Amiga-friendly programs can be re-directed to run on the new card. This will mean a lot more to A2000 owners than to those lucky enough to have an A4000, however both machines will benefit. Assuming you have an SVGA monitor handy (or a multisync such as the Commodore 1960 or Microvitec 1438) you can enlarge the Workbench up to 800 by 600 in 256 colours. At this size it really starts to look extremely professional and with a utility such as *MagicWB* looks absolutely stunning. With 256 colours it isn't particularly nippy, but with 16 colours it seems to work faster than the standard display. With more expensive monitors even larger displays are possible (up to 1024 by 768 or even 1600 by 1280).

Getting other software to use these new screen sizes depends on its age. Most modern programs make use of the monitor ScreenMode Preferences requester, and any program that does will find several new EGS options included in the monitor database. These programs (for example *Final Writer, Bars and Pipes, Real 3Dv2, Personal Paint, Art Department Professional*) will instantly benefit from the larger screen display, better colours and sometimes even show slight speed increases.

Finally, the graphics card can be used as nothing more than a display board for making the most of 24-bit graphics. Several programs support the EGS standard in this way – for example *ViewTek* and *Art Department Professional* will send files directly to an EGS device for display.

THE MARK OF ZORRO

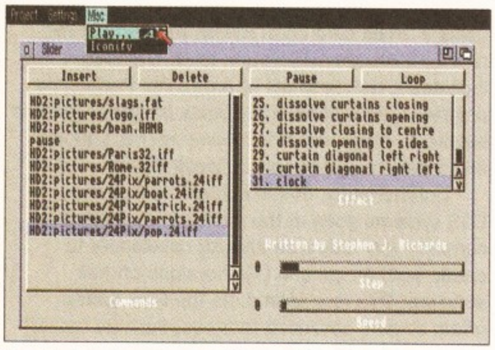
The Zorro slots are the imaginatively named slots which the 'big box' Amigas come with as



You want to know what the benefits of 16 million colours are? Just check out the subtle shading and excellent colour spreads on the illustration above.



TVPaint2.0 is a pleasure to behold on any graphics card, especially the Harlequin where fast updates and pure colours make it the choice of the pro.



The Harlequin comes with a spiffy slide-show program which will display 24-bit images with all manner of fades and wipes.

standard. Into these slots can be fitted SCSI interfaces, CD-ROM cards, sound cards and of course, graphics cards. The A2000 and A1500 come with Zorro II slots, which allow data to be transferred in chunks 16-bits wide. With the advent of the 68030-based A3000, the Zorro III slot appeared which means 32-bit wide access. The A4000 also has Zorro III slots, although, unfortunately, nearly all these machines have a problem in that one of the bus control chips, called Buster, can't handle the 32-bit access properly.

If the Buster Chip present has a serial number ending in -9 there are problems, and the Chip should be replaced with one ending with -11. We changed the Chip in our A4000/030 from -9 to -11, but to be honest the speed difference was disappointing, if not almost negligible. Upgrading the Buster makes more sense when SCSI hard drive interfaces are used, and can even be essential for some models (the Commodore licensed DKB 4091, for example).

LOW-COST SPECTRUM

The Spectrum is GVP's low cost entry into the 24-bit graphics card market, although for all that it comes out looking pretty good.

It's an autosensing Zorro II/III card, although if you need to (in other words, if your Buster is bust) the card can be locked to operate in Zorro II mode only. The Spectrum does not need to be connected to the Video slot, and can therefore be used at the same time as other cards (for example, the OpalVision system) to create quite advanced systems. In fact, several Spectrums can be fitted to the same Amiga for building videowalls or ludicrously powerful multimedia displays.

The heart of the card is a very at-home-in-a-PC-looking Cirrus Logic video Chip which generates image in a range of colours and resolutions depending on the amount of memory fitted to the card (1Mb or 2Mb). A good Workbench display is provided by the 800 by 600 mode, with can use 256 colours even with the 1Mb version. When using a program such as *TV Paint*, the 16million colour modes are important and you can choose from a small and chunky 320 by 200 to 640 by 480. With 2Mb of RAM the 800 by 600 display can also be in 24-bit. Depending on your monitor, displays of up to 1600 by 1280 are possible, but neither the SVGA nor multiscan I used were capable of displaying this mode.

Perhaps the most interesting feature of the Spectrum is the pass-through connector, which allows normal Amiga video from the standard 23 way connector to 'pass through' the card and out the SVGA-style 15 pin connector. This provides an easy option for using the system with only one monitor, although it has to be said that this option was a little intermittent and depending on screen modes and monitors the video occasionally wouldn't pass through.

The Spectrum is an EGS card, which means lots of software on five floppy disks, and a whole new Workbench to explore. Thankfully, there is also a set of new EGS monitor drivers which means that the Workbench and most other utility programs can be opened on the new display. Other programs can usually be 'promoted' by a small utility which watches for programs opening screens and then forces them to use to the new display. This isn't guaranteed to work all the time, especially when programs try to directly read and write screen memory (*Deluxe Paint* and *Brilliance* are prime examples).

The Spectrum is one of the cheaper graphics cards, but the quality inherent in all of GVP's products also makes it one of the best. In some respects it isn't particularly fast (Workbench emulation with more than 16 colours is a bit slow), but as a display device or *TVPaint* video card this lack of speed is no real disadvantage. If you can get the pass-through video system to work, there is no doubt that the Spectrum is one of most flexible cards available and will really make a huge difference to any Amiga system.

RAINBOW GOLD

Astonishingly expensive it may be, but the Rainbow simply oozes quality. The graphics Chip used is of INMOS design, and rather fast it is too. OK, very fast indeed – the fastest of all the cards tested! The Rainbow is another EGS card, which means again you have a new style of Workbench to play with and the possibility of re-directing programs to run under the new screen resolutions. The resolutions supported are the standard EGS ones of 640 by 480, 1024 by 768, 1600 by 1280, 800 by 600 and a few more in between.

The Rainbow doesn't connect to the video slot, but, unlike the cheaper cards, there is no pass-through connector for existing Amiga video. The reasoning probably goes something like "if you can afford this card, you can certainly afford something to plug into it" which makes perfect sense.

The default EGS set-up is also nice and clever and extremely intuitive; when you place the two monitors (one for the Amiga, one for the Rainbow) side-by-side. Simply move the mouse pointer over to the far side of the screen and it appears on the other monitor.

Workbench emulation is good, although the small promotion utility present with the Spectrum card is missing, so not all programs will run. Those that can will be able to be re-sized to fill the new screen display modes. Programs such as *Final Writer* and *TVPaint*, which need to do a lot of redrawing, work extremely well and are a lot faster than their native Amiga counterparts.

Differing from normal Amiga displays, the Rainbow EGS workbench system doesn't cope too well with dragging screens about. In fact, as with the Spectrum, nothing happens. However when swapping from program to program using the Amiga-M Amiga-N hot keys, instead of the jerk and swap like the Spectrum, the screen fades out and then fades in – very smart.

Unfortunately, if you really only need an EGS card to improve your existing set-up, you would be wasting an awful lot of money by purchasing the Rainbow 3. It's not designed as a quick AGA-improvement, rather as a serious professional quality graphics card. The output from the INMOS



Opalpaint has some extremely powerful compositing tools, and it is still being upgraded.

graphics Chip is excellent, and this is definitely only a card for those with a real need for quality video.

EXPANDABLE RETINA 3

The Retina has always been different from the rest of the graphics card pack. It was one of the very first cards which was actually affordable, and it has now been improved to take advantage of the Zorro III bus present in the A3000 and A4000.
There is no need to fit the Retina to the video slot – any Zorro will do – and multiple cards can be fitted if you have a specific purpose in mind. There is no video pass-through option, so be aware that a second monitor could well be essential.

The Retina 3 card is extremely fast, presumably helped by the new 32-bit wide bus and the on-board blitter. Workbench runs very fast indeed when displayed on this card, and 'serious' software is accelerated tremendously. *TVPaint2* supports the Retina, and it also really shifts the pixels.

Retina is not an EGS card, and does therefore not offer Workbench emulation in the same way as the Spectrum, Rainbow and Picasso cards. No new screen modes are introduced into the display database, and instead all screens are bodily lifted and displayed on the card. This can cause some problems, as some programs are not used to this approach and it can take them by surprise. Interestingly, some programs which don't work with the EGS Workbench emulation do work with the Retina. *Deluxe Paint,* for example, can be used, although the screen refresh is a little messy. Other odd things happen – *Cygnus Ed Professional* needs to be run on the Workbench rather that on its own screen.

Perhaps to make up for this shenanigans, MacroSystems have supplied some absolutely terrific software. First of all comes the remarkably badly named paint program – *VD Paint* – which actually gives *TVPaint* a rather good run for its money. It's very fast, and offers a great number of features. Best of all, it looks nothing like *Deluxe Paint* which makes a nice change. After using *VDPaint,* I'm not sure if the extra expense of buying *TVPaint* would actually be worthwhile...

Also supplied by MacroSystems are a host of utilities to view 24-bit pictures, and a superb Animation creation utility called RACE. RACE really makes the most of the extra Zorro III speed, and will play animations back extremely quickly, even directly from hard drive. When converting a collection of still frames (perhaps generated by *Imagine* or *Real 3D*) the level of compression can be set depending on the amount of 'noise' or inaccuracy you are prepared to suffer in the finished sequence. An excellent frame-by-frame editor is also supplied for tweaking the finished animations.

Recording the animations to tape is made possible by adding an optional daughterboard to the main Retina 3 board. The card will provide composite and S-VHS style video, which makes the Retina look extremely attractive for semi-professional video work.

It may lack the finesse of the EGS systems, but Retina gets the job done – and does it extremely quickly. If you are looking for an expandable system (you can add memory, standard video output and couple it closely with the excellent VLAB digitisers) Retina is very strong contender for the best value graphics card around.

PROFESSIONAL HARLEQUIN

At the opposite end of the price scale from the Retina comes the Harlequin 4000 card. Those lucky enough to have this card present will experience the best quality video possible from any Amiga card. The relatively high price betrays the fact that this card produces true broadcast-quality images, and once again you are expected to be able to afford another monitor, as there is no video pass-through.

Arrive at the BBC with any other card and the engineers will turn their noses up. With a Harlequin fitted, they'll love you. Even when used with a standard monitor such as an 1960, it's easy to see the increased quality.

Depending on the amount of memory on the card and the chosen application, Harlequin can open a screen at several resolutions: 910 x 576, 832 x 576 and 740 x 576.

In addition, a full 256 level Alpha channel and animation orientated double buffering modes are available. The 'plus' versions include genlocks and other goodies.

One of the features which you pay for is the on-board 8-bit Alpha channel. Normally high quality Amiga graphics are stored as 24-bit images, which allows for 16.7 million different colours. However, the Harlequin alpha channel raises this depth to 32-bits. Before you start reaching for your calculator to work out how many different colours are now possible, this isn't what happens. Instead the channel offers a special mask that can be used when combining the 24-bit image with, say, incoming genlocked video. The 8-bit channel offers 256 different levels for the mask, which means instead of a simple (and rather false looking) image floating over video, the image can offer some aliaising and shading. A picture of a window can show the live video underneath, and yet still show computer-generated reflections and textures. Ray tracing programs such as *Caligari* and *Real3Dv2* will generate 32-bit images automatically.

The supplied software is weak, as the Harlequin depends on others to support it. Workbench support is non-existent. You cannot run any programs which do not specifically provide a Harlequin option. That said, big name graphics programs (such as *Real3D* and *TVPaint*) do work extremely well. If you are in the professional video business you can be sure any titling or effects software you require will have a Harlequin driver included.

This is a professional card, although prices for lower models start at a reasonable £685. The model numbers are in no way linked with Amiga models, rather they reflect the amount of video memory present on the card. The 4000 card will work fine on the A2000, and the 1500 card works fine on the Amiga 4000.

A 'plus' version is also available, which adds genlocking, multiple variable depth screens and colour cycling facilities. Some dealers are also bundling a free VLAB video digitiser with the plus, so call around. There is no doubt that the unsurpassed quality makes the Harlequin the best choice for professional use.

BUDGET OPALVISION

When the OpalVision was first released, the Amiga graphics community went wild. Here was a graphics card which offered 24-bit quality, was perfect for video, came bundled with some excellent software and, what's more, there were plenty of exciting add-on modules to come. That was then, this is now – and today the OpalVision is starting to look extremely long in the incisor department.



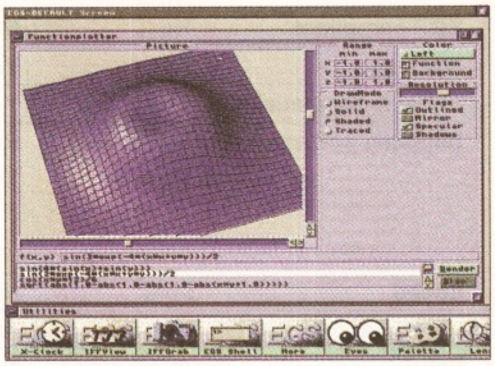
This is just the sort of thing that graphics cards were invented for – messing with the digitised pictures in TVPaint. Wait a minute, one of those blokes in the background looks a bit familiar...

This is the only card on test which requires fitting to the special Amiga video slot in which to operate. On an A4000, I had to place a piece of plastic between the OpalVision card and the bank of SIMMS on the Amiga motherboard to avoid myself worrying about short circuits. Switch on and... nothing. Whoops, the OpalVision doesn't like DblPal or Productivity modes, so better get that Workbench back into normal 256-line Pal Mode.

OpalVision graphic are combined with the Amiga graphics coming from the internal videoslot, and because of this there is a good working 'pass through' system. Only one monitor is required, and fitting another to the normal Amiga video output can actually overload the video bus. There is no need to use an external cable, but the loss of the flicker-free modes is a big disadvantage if you have grown used to them.

Software support for the OpalVision in third part programs isn't really hard to come by, as this was one of the first cards to make a big impression. There is no Workbench emulation (there is no need with the video pass-through), and various packages such as *Imagine* and the *Art Department Professional* will both send rendered images for display. *Real3Dv2* can also be patched to make use of the 24-bit display.

The supplied software is excellent, there can be no doubt about that. *OpalPaint* could still claim to be one of the best Amiga paint programs ever, if video resolutions are all that is required. The thumbnail option for selecting pictures, the different drawing textures – *OpalPaint* is very good, and an EGS version would be lovely (but unlikely). The other items of software (including an animation creator and a multimedia presentation system) are smart, but are also starting to look a bit dated. Unfortunately, if video isn't your scene, the



It is possible to write software which uses the EGS system. All the details are freely available, but the big question is would you really want to? Retargetable graphics may be clever, but so far there is no real need for them.

OpalVision is a bit of a disaster. The screen resolutions are poor, and the flickering in 768 by 850 PAL mode is tedious to work with.

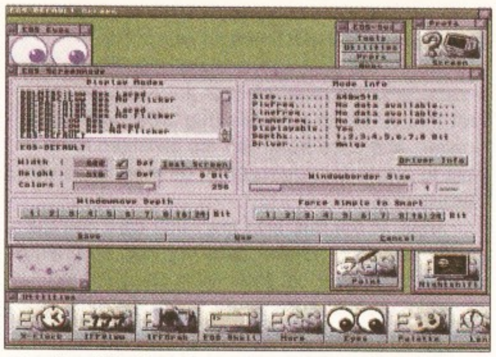
The OpalVision modules was heavily hyped as the PAL version of the VideoToaster. Soon, we were told, the Roaster Chip would appear and we could all generate our own real-time video effects. The multi-way video and sound mixing unit would give us a professional studio on our desks. The scanrate converter would give us all back our flicker-free Workbench. Sadly, these modules have yet to appear. Until they do, the OpalVision can only be recommended for video fans on a budget. You can pick this card up very cheaply if you shop around, but remember – it does nothing that the AGA chipset can't do. If you have an A4000, there is nothing to be gained by buying an OpalVision.

PASSING PICASSO II

The Picasso is a full length Zorro II card which doesn't make use of the video slot. Many new screen modes are provided, ranging from 640 x 480 in 24-bit to 1600 x 1200 in 16 colours on the 1Mb model, or 800 x 600 in 24-bit to 1600 x 1200 in 256 colours on the 2Mb model. A 16-bit mode is available at up to 1152 x 900, and screens in fewer than 256 colours are also supported. A fast onboard blitter is included to speed up operations like scrolling text and copying bitmaps.

The Picasso features a pass-through connector, allowing a single monitor to be used for both the native Amiga display and the new high-resolution screen modes. This creates something of a problem; while normal ECS and AGA Amigas output video in the range 15 kHz to 31 kHz, the Picasso prefers frequencies from 31 kHz right up to 64 kHz. Very few, if any, of the monitors best suited to the Picasso will also support the 15 kHz necessary for native Amiga screens.

The best all-round solution is to install a flicker-fixer or scan-doubler in your Amiga. This ensures that the Amiga's native video will always be at least 31 kHz, and gives access to a much wider range of monitors. A cheaper alternative is to use one of the Commodore-compatible multisync monitors that can scan from 15 kHz to 38 kHz.



Running Workbench on an EGS graphics card gives a lot of potential for customising the way it looks and works. Plus it will keep an eye on you...

The new Picasso screen modes are added to the monitor display database which Commodore introduced with Workbench 2.0, and so are directly available to any program that provides a screenmode requester. Older Amiga software that doesn't support the monitor database is catered for by the ChangeScreen commodity, which allows you to conveniently make any program use one of the Picasso screen modes instead of a native Amiga screen.

As well as supporting multiple screens, the Picasso allows these screens to be dragged, a feature not seen on any other card. This is particularly clever, given that while the Amiga contains special hardware to support this, the Picasso does not. Although Picasso and Amiga screens can't be displayed simultaneously, several Picasso screens can be viewed at the same time, and you can work on the background screens by activating them with the mouse, just as you would expect. However, all screens will use the colour palette of the currently active screen, because the Picasso can't change colours in mid display.

The speed of the Workbench emulation is largely dependent on the speed of your Amiga, since the CPU is used for much of the work. Realistically, you should have at least a 68030 with 4Mb of 32-bit memory before you consider installing a Picasso.

In use, the Picasso feels about the same speed as a normal Amiga screen running in 4 or 8 colours. However, while the speed of the native Amiga chipset degrades rapidly as you increase resolution and number of colours, the Picasso's speed remains fairly constant, even at high resolutions like 1280 x 1024 in 256 colours.

By default, the Picasso uses planar bitmaps for maximum compatibility with normal Amiga screens. However, the monitor driver also supports a chunky 8-bit mode, which is up to 10 times faster for some operations when running in 256 colours. Although early releases of this proved somewhat buggy, the current version (2.51) is very stable, and compatible with the majority of software.

Several utilities for displaying JPEG, GIF and 24-bit IFF files are included with the Picasso, as well as a simple MPEG player. In the UK, the card also comes bundled with *TV Paint Jr*, which is a cut-down version of *TV Paint 2.0.*

While the Picasso is aimed mainly at users looking for more resolution, more colours, and higher refresh rates, VillageTronic can also supply an optional video encoder card (£150) which will allow you to transfer the Picasso's 24-bit output to video tape in composite or S-VHS format. This is useful for playing back 16-bit and 24-bit animations, though it won't be as fast as an Amiga 3000 or 4000 playing back HAM-8 animations from 32-bit Chip RAM, since it is limited by the speed of the Zorro II bus.

[**Editor's note:** The UK distributors of Picasso were unable to supply *Amiga Shopper* with a Picasso II for comparative testing]. AS

GRAPHICS CARDS – A COMPARATIVE OVERVIEW

	Retina 3	Picasso II	Rainbow	Harlequin	OpalVision	Spectrum
Price	£589.99	£284 (1Mb) £320 (2Mb)	£1490 (4Mb)	£685 (1Mb) £1090(4Mb)	£340	£349 (1Mb) £399 (2Mb)
Distributor	ACS	Blittersoft	Chartscreen	ACS	Indi	Silica
Video pass-through	No	Yes	No	No	Yes	Yes
RGB output	Yes	Yes	Yes	Yes	Yes	Yes
Video Output	Optional	Optional	No	No	Yes	No
EGS compliant	No	No	Yes	No	No	Yes
Workbench	Yes	Yes	Yes	No	No	Yes emulation
TVPaint Compatiable	Yes	Yes	Yes	Yes	No	Yes compatible
Supplied software	VDPaint Viewers	Personal Paint TVPaint Jnr	EGS Paint	Slideshow SpectraPaint	OpalPaint Animation Presentation Slideshow	EGS Paint
Speed	90%	N/A	97%	95%	80%	85%
Performance	90%	N/A	96%	90%	70%	90%
Value	85%	N/A	70%	75%	70%	87%
Overall	87%	N/A	86%	86%	74%	87%

ACS = Amiga Centre Scotland (☎ 089 687 583) Silica Distribution (☎ 081 309 1111)
ChartScreen (UK) (☎ 0425 475 515) Indi (☎ 0543 419 999) Blittersoft (☎ 0908 220 196)

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  The worlds easiest to use slideshow generator
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BUG OUT!

Toby Simpson shows you how to be a more productive programmer by giving you some hints and tips about how to tackle the problem of those nasty bugs.

Bugs... and we're not talking about the cute ones with six legs and large eyes either, we're talking about the nasty, unpleasant ones – those that live inside your programs, the ones that make even the simplest routine fail dramatically, and turn you into a gurgling wreck, staying up all night, and chain-drinking coffee. They have the potential to drive beginners away from programming, and cause professionals up against deadlines to head rapidly towards nervous breakdowns, and, indeed, drink even more coffee.

And the least funny thing about all this stress is that almost all of it is totally unnecessary, and can be avoided with the greatest of ease by simply knowing how to tackle the problem properly. Debugging is an art and a skill. Most programmers, however, don't do any proper training, just thinking of it as an integral part to programming which they can pick up as they go along. This article aims to give you some guidelines to debugging, some hints and methods of doing it in the hope that we can all live a more peaceful life, and be a whole bunch more productive when it comes to programming our favourite computer. The techniques described here apply just as easily to 'C' as they do to Assembly language, ARexx, or any computer language. We'll be looking at some language specific examples, but on the whole, whatever you program, if you've had late nights working unproductively till the early hours of the morning, then you should be able to gain something in these pages. Don't expect this to be the exhaustive answer to all of your problems, though, but the methods should save you a lot of money drinking your sorrows away at the pub.

BLEEDING BUGS

Any program longer than about ten lines, in any language, is unlikely to work first time. When it doesn't, it might be that you've made typing errors, and your Assembler, Interpreter or Compiler will spot these errors for you and you'll be forced to fix them before continuing. These are the easy ones, you're told where the error is, what it is, and in some cases what to do to fix it.

Then there are the nasty ones. These don't show up at first, not until your program is actually running. They will cause things to go wrong in some way. These are the bugs, and the larger the program, the more you are going to have. This is where most people start feeling the strain. Let's look at an example, imagine you had 20,000 lines of 68000 Assembly language for a game you have written, and one day, for no reason, half way through a level you've played a hundred times before, your Amiga makes a high pitched sound, and then crashes. Oh, what caused that? How did I do it? We're talking 20,000 lines here – it could be anywhere. How do I start? It can be very depressing indeed when this happens. And when you've asked yourself all of these questions, it's easy to see why you would rather opt for the pub. But it need not be this way – the chances are that this bug is quite easy to find, and once you've gathered a little evidence those 20,000 lines you might have had to check become a few hundred, maybe less, which makes the prospect a lot less daunting.

> **"Neat, well-commented, well-structured programming reduces the probability of bugs and, when they do occur, makes them easier to find."**

CODING CLUES

Those of you who have read some of my Code Clinics in the past will have heard me refer to debugging as a detective game. Pick up evidence – as you gather evidence, you reduce the places where the problem can be. To use an example I'm sure I've used before, if you are a real detective, and a murder has been committed, there are a couple of options open to you. You could knock on every single person's door in the entire world and ask them if they did it. It would take a very long time, and the chances are you won't find the guilty party, because they aren't going to say "yes, I did it – it's a fair cop, haul me in" anyway. They are going to say "no, it wasn't me.", and yet, amazingly, this is how most people debug their programs. Blindly feeling their way through reams and reams of listing in the vague hope that the bug is going to jump off the screen and say "Hey you! I'm here". This is not to say that occasionally bugs never spring up in this way; it's just not something that happens very often. A better approach to the murder problem is to get a description of the murderer if you can... anything. Then you can start eliminating possibilities, and before you know it, you don't have to talk to four billion people after all, you just have to pop out and find a small handful to generously help you with your enquiries. And this is what debugging is all about – simple efficient detective work.

GATHERING CLUES

So, where *do* we start? Let's continue to use our 20,000 line assembly language problem as an example of how to tackle something like this. So, what clues do we have? Well, precious few in this case. This had never happened before, and it just happened in the middle of a level. First thing to do is to write down exactly what you were doing when the crash happened:

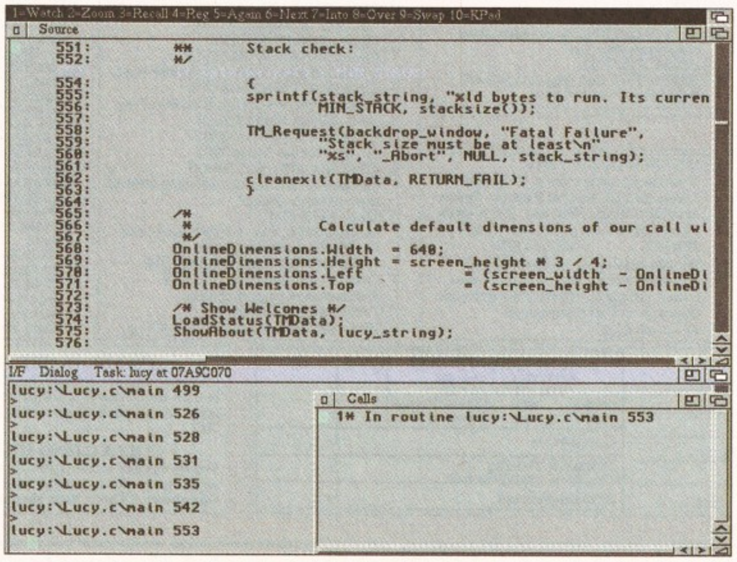
1. Write down what happened, and what you were doing before you forget: "I was playing level 3. I just shot the mothership, and the screen went odd, there was a high-pitched sound and the computer crashed. No guru popped up and I had to switch the power off. This was my second game, it did not happen first time around."

OK, that actually tells us a lot. Firstly, of course, it did happen after the mothership was blown up. But, before we even *think* of looking at the source code, we have to see if we can reproduce this bug. If we can't reproduce it, we'll need a lot more evidence and examples before we can find it.

2. Attempt to find a reliable way of reproducing the fault.

"Tried again, wouldn't happen. Second time I tried it did happen. Followed this through, it happens on the second time you try and play the game, first time around it works fine. Again, it happens after the mothership is destroyed."

OK, well, we've only been debugging for two minutes, and already we've almost certainly solved the problem. Since it happens on the second time



SAS C's CodeProbe debugger in Action. With a little help, debugging doesn't have to be the drawn-out, painful task that it easily could be.

COMMON PITFALLS

Here are just a small handful of the common problems which happen in C and Assembler. A lot of these also apply, in slightly different forms, to other languages such as ARexx, Oberon, or Modula-II.

ASSEMBLER:

- Using incorrect parameters for Function Calls. Use Macros to access Amiga System Libraries. These reduce the chances of you making some of these errors.
- Pulling more off the Stack than you put on (causes unreliable program function – it may crash suddenly, or just mysteriously jump to another part in the program)
- Accessing a single byte location as a word, or long word, or vice versa.

C PROGRAMMING:

- Declaring variables on the stack, which need to remain valid for longer than they do. For example, a common problem is for people to have a function which opens a window and sets up the display for a program. They define a string variable (char window_title[128]) at the start of the function, copy information to it, open a window with that variable as the window title, and then return from the function. *All local variables in C are on the stack!* When you exit the function they all *become invalid* and point to other data.
- Another stack related one which causes many problems indeed. Variables declared locally, as we now know, are created on the stack. Also, unless you specifically initialise them to a value, they will contain a random value depending on what was on the stack previously. This means that your freshly defined pointers could be pointing to random memory areas. If your variables *need* to contain specific initial values, you must declare them as having them. Compilers can spot some of this type of error.
- And one more – stack related again. C programs can require large stacks in order to run. If you run your C program from the Shell, you might have the default 4000 byte stack, which for most C programs might not be enough. Not having the right size stack creates unreliable operation, and random crashes. So, be warned – your random crash might not be a bug in your program at all; it might be that your stack is not large enough.

we play, it's most likely to be uninitialised variables; ie we have a whole bunch of data items which are set to zero when the game is first run, but are not correctly reset to zero before each play – so they will be zero the first time we play, but something altogether different next time. Let's look into the source code. This is where we'll look:

- The mothership code. What information does it use in its calculations?

Well, it uses one global variable, 'mothership_bonus', a memory location which contains the bonus points to add to the players score every time they hit the mothership. It is multiplied by two each time we use it. Only even if this was not set to zero, that would not cause our problem, we would just get a lot of bonus points at the start of the game. So we need more clues. What would be really handy to know is exactly what is in 'mothership_bonus' before it is added to the score. This is where we need to use some tools. We'll discuss tools later in this article, but in the meanwhile, let's assume we make a small alteration to the code to copy the contents of mothership_bonus to some safe area of memory, and not add it to the score as we would normally do. We run the program, play it twice and see what happens. The crash does not occur, so it's obviously a side-effect of adding the bonus to the score. We quit the program and use a utility of some kind to check our magic value. It's 'FF004E20' in hexadecimal. The bonus *should* have been 20,000. 4E20, the right hand part of the number, when converted to decimal is indeed 20,000. But where did the FF come from at the start?

Since our mothership bonus uses this full number, it's adding the number -16757216 (the signed conversion of FF004E20 from hexadecimal to decimal) to the score. Well, it's no wonder something then goes wrong, because our score output routine can't deal with numbers this large and is going to overflow its buffer, which turned out to be this actual problem here. It turned out that the actual fault was in the lives routine. When you lose your last life, your lives counter goes from 0 to -1, and we store the new lives out into a single byte storage location, but as a two byte value – overwriting the start of the score. It was basically a silly typing error:

```
PG_Lose_Life:  move.w   d0,current_lives
```

... which should have been:

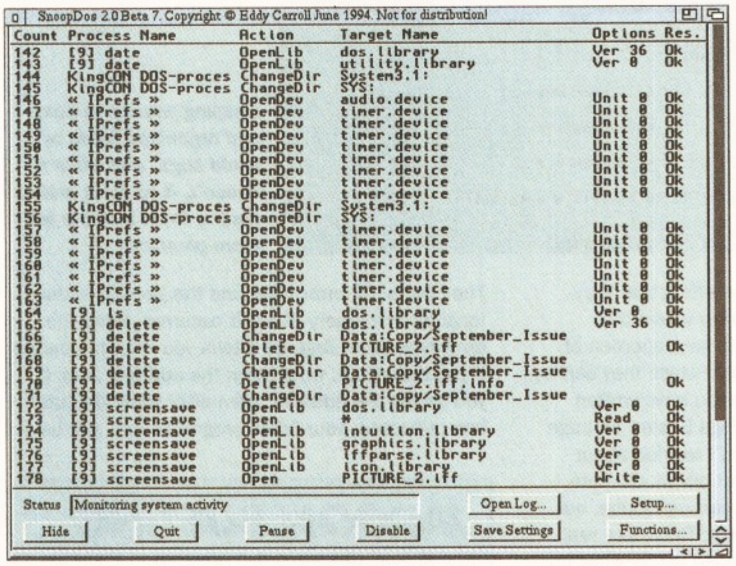
```
PG_Lose_Life:  move.b   d0,current_lives
```

One letter – a '.w' should have been typed as a '.b'. Easy to do. Look at the hassle it caused. You might not be able to program assembly language, but if you're a programmer on the Amiga, the theory of the above should be reasonably straightforward. Bug solved from start to finish in 30 minutes.

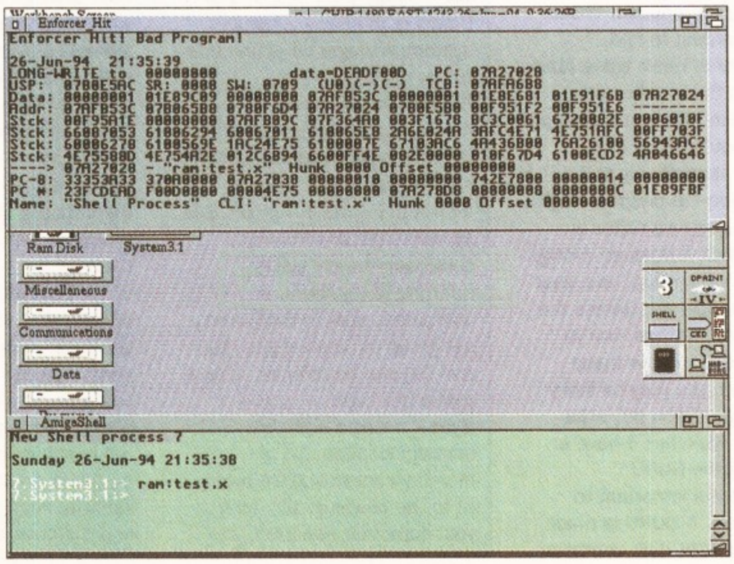
OK, don't expect them all to be as easy to solve as the above, or indeed as difficult. Some bugs are obvious and can be solved instantly. But remember what the original fault was, and follow it through to see where the bug ended up being. Remember – we could have spent *hours* looking through the mothership code for the bug. We would *not* have found it there, as the bug was 5,000 lines earlier in the program with one single letter. It is by finding and gathering clues that we were able to solve this one.

HELP WITH CLUES

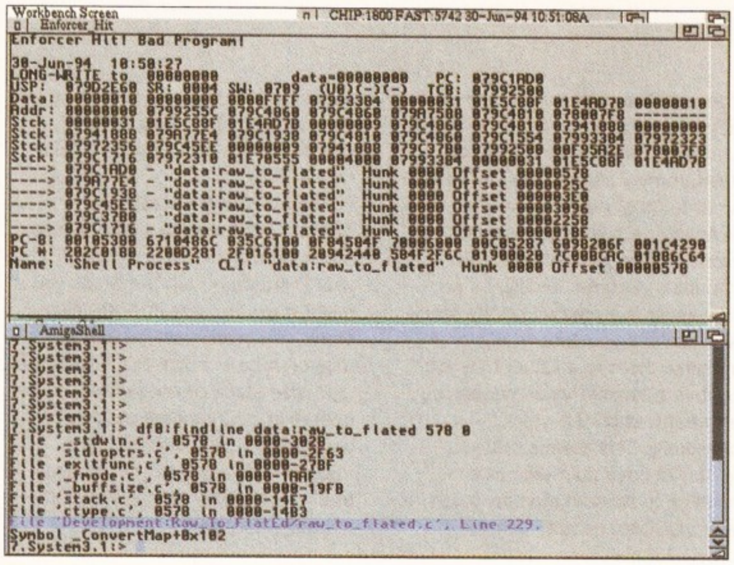
Bugs fall into several categories. There are those



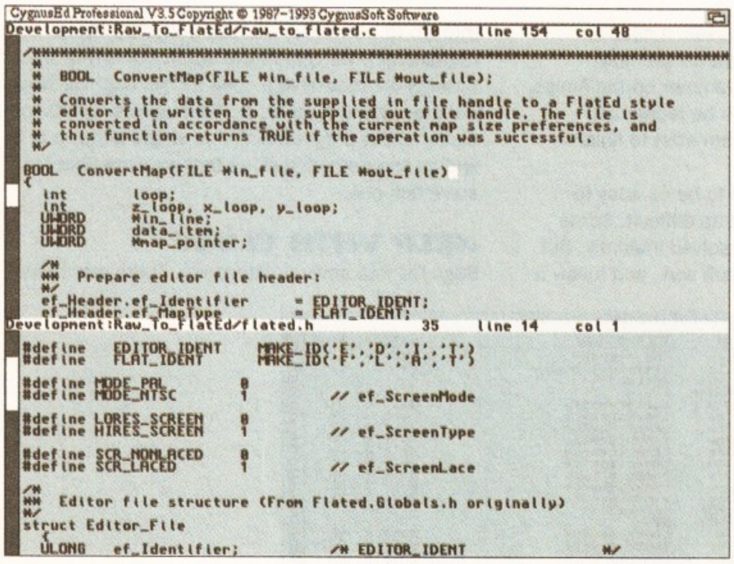
SnoopDOS doing its work, watching every major DOS action I take. This is a picture of the latest beta version – you saw it first in brilliant Amiga Shopper!



Enforcer in Action. Enforcer is a utility which spots illegal accesses to memory and then tells you what they were. Used in conjunction with FindHit, it can pinpoint the exact line in your program which caused the hit! It requires a MMU (Memory Management Unit), such as those found on 68030, 68040 and 68060 chips (but NOT 68EC030s, as found in A4000/030s).



Making good use of tools. Enforcer has generated a hit saying that the program made an illegal access to memory. Armed with "FindLine", it has told us exactly which line in our source code caused the hit!



Keeping your code neat and organised helps to avoid bugs, and when it doesn't, it at least makes finding them a whole lot more pleasant!

which are obvious. You see the effect that they cause, and you immediately know where the problem is. These make up a large proportion of program faults, and the speed at which they can be solved depends on how neatly you have written your program (see 'Making Things Easier' on page 19), but, on the whole, we aren't worried about them. Then there are those that are much more unpleasant – crashes that we can reproduce, but we don't know what the cause is. These are real bugs, as are the third type – those which show up randomly and cannot be easily reproduced. These are the most nasty, and the hardest to find.

In addition to having our three basic types (and not all bugs can be grouped in these, of course), there are different ways in which they can show up. Your program could crash, it could result in a corrupted screen or graphics, alternatively text could become garbled, or maybe the program might not operate correctly in some other way after a period of time. The thing is, when it *does* go wrong, your first clues are the results of the bug, and what you were doing just before it happened. Unless the bug is of the first kind, easy and obvious, you're now wanting clues and evidence, so note these down. If your computer crashes, you may be lucky enough to get a GURU message. If you do, write this down. Newer Amigas with Kickstart 3 have an annoying habit of only showing the GURU messages for ten seconds, so it's important to note which bit to write down first. A GURU is made up of a message and then two eight digit numbers. The first is the error type, and the second is the location in memory where it occurred. Write the error type down *first*, as it tells you what happened. If you have time, write down the address also. If you do get the address, then after your computer has re-booted, your failed program might still be in

memory, so you could use a tool such as 'Machine Code Monitor' (see Debugging Tools on page 19) to look at the part of the program which went wrong. Of course, it may be overwritten by the reset, and also, depending on how serious your crash was, the information contained in the GURU could be totally useless – but it's a clue all the same, and therefore worth following up. The official Amiga Includes contain a list of what the GURU errors are, so you can easily find out what happened. As we'll see below when we discuss tools, there are many programs that can then help you to pinpoint the exact line of source code which caused the crash!

When you've written down what happened, write down what you were doing. You'll be amazed how quickly you forget things like this. Now you can start thinking about where the problem can be, using these as a starting point. To verify if these initial clues are of use, your first stage is to reproduce the error. If you can, you should be able to start looking at your code, and putting test code in to help you further reduce the area of source where the fault could be. This is important: do *not* spend hours looking through hundreds of lines of code! Print messages on the screen at key points, or something like that, so you can see how far your program got, or where it's been, when it all falls apart. Reduce your workload as much as you can!

If you can reproduce it, then by using test code and tools you should be able to locate the fault reasonably accurately and be able to solve it. If you can't, you have further problems. You'll need more clues. Following are some things that could easily have happened:

It may be a typing error which did not cause an error from the Interpreter, Compiler, or Assembler. These are *very* common in both Assembly Language and C. For example, here is a small assembler program fragment. We're using macros to access Amiga Operating System calls, SYS for exec.library and INT for intuition.library:

```
leaMyMessageStructure(pc),a2
SYSReplyMessage
```

Looks great until you realise that the parameter for ReplyMessage (In exec.library) is A1, not A2. Or, how about this:

```
leaMyMessageStructure(pc),a2
INTReplyMessage
```

Whoops! ReplyMessage is an 'exec.library'

JARGON BUSTING

Bit – Binary Digit. A 1 or a 0. Binary is the Base 2 number system. A single bit is just one binary digit.

Hexadecimal – base 16 number system. Instead of our Decimal system, Hexadecimal has 16 digits, from 0 to 9, and then A to F (where A is 10, B is 11 etc). This is particularly computer friendly way of referring to numbers, as computers work in twos, and a set group of binary digits (1s and 0s) can be referred to by a single hex digit.

Byte – a single eight bit memory location. 1K of memory contains 1024 bytes (2 to the power of 10), so if your computer has 1Mb, you have 1 Mega Byte of memory, which is actually 1024K, or 1048576 bytes, or over 8 million single binary digits of memory. Each byte can store a single character, so assuming an average word length of 5 characters, you could theoretically fit a 209715 thousand word document into that memory – a sizable novel.

CIX – CompuLink Information eXchange. This is a dial up computer service which you need a modem to access. It costs on a monthly basis, billed to your credit card. There are many Amiga developers available on CIX who can help you with bugs and problems, and CIX does allow you to access the InterNet.

Internet/FTP – The internet is a vast world wide network of computers. It's worthy of a whole feature in itself, and indeed was in last month's *Amiga Shopper* (see issue 40 for more information on the Internet – go to page 60 if you haven't got it already). FTP is "File Transfer Protocol". It's a method by which you can connect to different computers on the Internet and transfer files from there to your machine. There are many 'FTP Sites' around the world containing several GIGA bytes of Amiga programs, you can spend many hours fetching new utilities!

DEBUGGING TOOLS

There are programs out there to help you! We don't have the space to detail them all here, but we can certainly skirt over some of the most useful ones out there. Commodore do a very nice disk set called the "3.1 Amiga Developer Kit" which, for the small sum of £23, gives you a whole wealth of debugging tools together with their documentation, examples of programs, and the latest Include files and AutoDocs (which document in detail every single routine in the Amiga's operating system). It is worth its weight in gold for every Amiga developer, so if you don't have it, start saving. If you are interested in obtaining it, write to:

Sharon McGuffie,
Commodore Business Machines (UK) Ltd.,
Commodore House,
The Switchback,
Gardner Rd, Maidenhead,
Berks SL6 7XA

Enclose a cheque made payable to Commodore Business Machines (UK) Ltd for £23.00, and a covering letter explaining you want the "3.1 Amiga Developer Kit". If you're particularly interested in getting even better developer support, you might like to enquire about the Amiga Developer programme, and becoming a registered Amiga Developer.

Of course the Amiga Developer Kit isn't the beginning and end of a supply of Tools. There is a vast range available as shareware, or on the Public Domain (PD), and specific debuggers (such as *CodeProbe* – supplied with *SAS/C*, and *MonAm* – supplied with DevPac) come with programming languages when you buy them. Use them when you can, as they do a lot of the work for you and are specifically tailored to the language you are developing with. As far as the PD and shareware ones go, the best place to get them from is over the phone lines from a service such as CIX, or a direct Internet dial-up link such as the service supplied by Demon Internet Services. (See last month's article on the Internet for more information on FTP – turn to page 60 for information on how to order your back issues). If you do not have access to a modem, you can contact a PD library and see what they have to offer. Some of the tools which I have acquired over the years and I could not live without are:

● **strings** – you specify a file, and it searches the file for everything that could be a string and shows it on the screen.

● **alert** – you specify a guru number, and it tells you what it was.

● **mon** – a powerful machine code monitor by Timo Rossi, current version I have seen is 1.65 (freeware).

● **ARTM** – Amiga Real Time Monitor. Latest release is shareware. This allows you to fiddle with various system information. For example, you can list all windows currently open and selectively close them. This is useful if your program has fallen over leaving windows, or other system structures open, as you can close them down.

● **SnoopDos** – by Eddy Carroll. Indispensable. Current version is 1.7, although a super new version (*SnoopDOS 2*) should be available this summer. Simply put, *SnoopDos* snoops on DOS, watches what it is doing, and shows you on the screen. You can see what files were opened, for example, by an application. A highly useful debugging tool.

There are many hundreds of tools out there, and over the years you will collect a whole bunch of them. They can all help you find and fix bugs when used properly.

So, the moral of this is that you've got a powerful computer. Don't do any work that you couldn't make it do for you – it won't complain, get stressed, or work less efficiently after a few hours.

function, not 'intuition.library'. Your assembler isn't going to find these.

How about this little 'C' problem. This routine converts a string to upper case. Well, it should, but it does not – it has a bug in it:

```
void ConvertToUpperCase(char *string)
{
int loop;
for (loop = 0; loop < strlen(string);☛
loop++)
   {
   if (*string <= 'z' || *string >= 'a')
      string = string - 0x20;
   string++;
   }
}
```

OK, it's not as efficient as it could be, but it does illustrate a problem. The line reading 'string = string -0x20' should have been '*string = *string – 0x20' - the result of our bugged form is to actually subtract 32 from the current pointer to the character we are looking at. Indeed, the chances are that this routine will go merrily backwards through memory and actually do very little. It may never exit depending on where subtracting 32 takes us too.

These sort of typographical errors can be time consuming to find, and exceptionally irritating. If you can, get your computer to do some of the work for you. In the games development work I do, I often end up with source files with 40,000 lines of code or more. Searching this for typing errors is not realistic, so I write little utilities in 'C' which actually check my source code line by line and warn me of every time I have potentially mis-used a structure reference, or a register. It won't trap everything, but it gets better with each application I write. Get your machine to do the work for you!

You can also help to track down the random bugs by showing information on the screen at regular points in your program, ie. 'I just entered the ShowAbout Routine', or 'the current string pointer points to...' This way, when it does fall over, you should have a fairly good idea of where the program was when it went wrong, and the events leading up to it.

MAKING THINGS EASIER

Neat, well-commented, well-structured programming reduces the probability of bugs, and when they do occur, makes them easier to find. In my job I get to see a great deal of other people's code, and it continues to surprise me that people can attempt to write vast programs and consistently fail to document them in any way. It may take a little extra time to do it properly, but you'll save that time back many times over when you have to find your first bug. Here are some tips on programming technique to make finding problems easier when they do occur:

1. Plan your program structure before you start writing. This helps to avoid "Spaghetti Code" where everything is a total mess as you've bolted new bits on all over the shooting match. Spaghetti Coding is a nightmare waiting to happen. Badly structured programs are more likely to contain unpredictable bugs which will take longer to solve as the clues are likely to be harder to find.

2. Use meaningful variable names. 'a2_lp', or 'x' for example are of no use to anyone. You can have long variable names in modern languages.

3. Use meaningful function and sub-routine names. If you have a function, for example, which shows an "About" requester for your new Amiga application, you could call it "ShowAboutRequester", or "ShowAbout". At least this way you'll know what the routine does at a glance.

4. When you have decided on a programming style that you like and that suits you, stick to it – don't get lazy with it!

5. Comment your code where it is required. You can get carried away with comments. Take this C example:

```
loop++;  /* Increment 'loop' by one */
```

That is a pointless comment. We know exactly what it does anyway. How about:

```
loop++;  /* Proceed to next item in ☛
array */
```

The best hint towards comments is to comment 'functional blocks' of code. So, when you have a few lines which perform a job as a block, document them all in one line, for example: "This prepares and opens our main window".

6. Document every function within your source code. Say what it does, what parameters (if any) it expects, and, if it returns anything, what it is. Assembly language programmers might also want to note which registers are corrupted. This way, when you come back to something several months after you wrote it originally, you know exactly what it does and how to use it.

7. Keep regular backups of your program code, not just for the security as you might expect, but for debugging purposes. If something goes wrong, or you find a bug that you can't solve, you can work your way back a few days to find out where you introduced the problem. Then, by using a utility which compares two files you can see at an instant exactly what you changed between the two versions, which gives you clues you would not otherwise have.

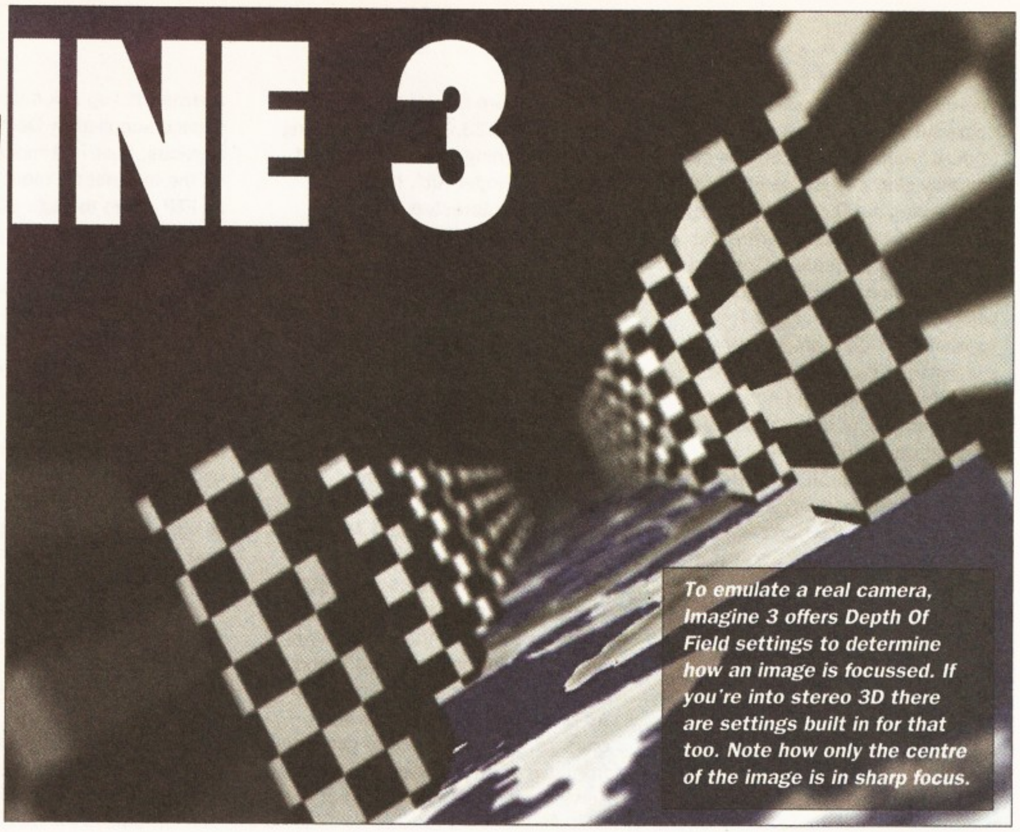
8. Document every major change you make. Keep a text file of things that you add or alter. It's particularly useful when used in conjunction with point 6, as you can look back, and find out the most likely change which caused the problem.

This list could go on forever of course, but by taking some of the above advice, you can make a miserable bug finding experience a little less distressing for yourself.

CONCLUSION

Debugging does not have to be the long drawn-out painful task that it could be. Just by treating it as a logical problem that has to be solved by gathering evidence and reducing the areas of the program where the bug could be, it can be a reasonably straightforward task which takes little of your time and causes no real stress. Best of luck, and happy debugging! AS

IMAGINE 3

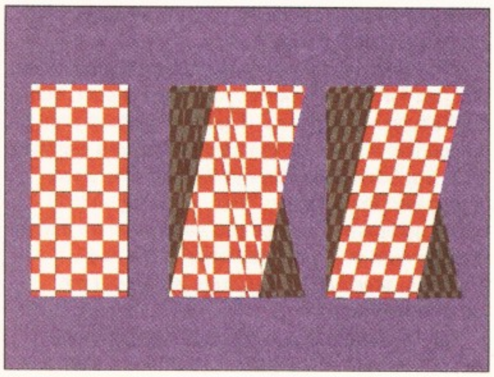


To emulate a real camera, Imagine 3 offers Depth Of Field settings to determine how an image is focussed. If you're into stereo 3D there are settings built in for that too. Note how only the centre of the image is in sharp focus.

Gary Whiteley gets to grips with the feature-packed Imagine 3 and wonders why Impulse never seem to get it quite right.

Imagine 3, the latest version of Impulse's inimitable 3D modelling and animation program, has been a heck of a long time a-coming. Announcements of its birth were wholly exaggerated and punters, many of whom had paid in advance for their upgrades, became almost rabid at the continual delays. Weeks turned to months, until Impulse conceded to customer demand and released – Version 2.9! – as a sop to increasingly enraged would-be *Imagine 3* owners.

But 2.9 wasn't 3.0, and many of the promised improvements weren't in the 2.9 (Beta) software, whilst some niggling bugs still hadn't been ironed out from the version 2.0 release. What were Impulse up to?



When a texture has its 'LockState' set by a State, it no longer distorts if the object changes shape. Most textures have several parameters which can be tweaked to produce the results you are looking for, though the values for each parameter are often left to the user to figure out – which can involve some lengthy experimentation. Whilst there's no way that Impulse could be expected to provide settings to cover every possible occasion, it would have been nice if they'd included a set of Attribute files (files which hold information about colour, hardness, what maps and textures are to be used, their settings and other data) to load in and modify as necessary, rather then leaving everything up to the user – who may not understand how to make the textures work in any case.

The money was in, they had a huge number of new users thanks to *Amiga Format's* cover disk offer, and yet the new software kept failing to make it out of the door. The more time that passed, the more we assumed that Impulse must have been doing something pretty damn good to their software to drag it kicking and screaming into contention with the likes of *LightWave* and *Real 3D v2*. There were promises of particle effects, bones and textures, debates about lens flares (grudgingly added by Impulse when user-pressure became too intense), the prospect of sync sound with animations (which didn't make it to the final release), faster rendering, better antialiasing, a brand new manual and lots more.

Now that the software is on the street, have Impulse lived up to their promises? Does the new *Imagine* reach our Pavlovian expectations? There's only one way to find out, and that's by giving it a good work-out on the old Amiga. And that's what I've tried to do.

To put you in the picture, I've been using *Imagine* (and its precursors *Silver* and *Turbo Silver*) since about 1988. *Imagine 2* was a big step up from the original *Imagine* and *Imagine 3* continues that tradition. New features *do* abound, but some of the old problems still persist, and at least one new bug has emerged between version 2.9 and 3.0. But enough of this and on with the show...

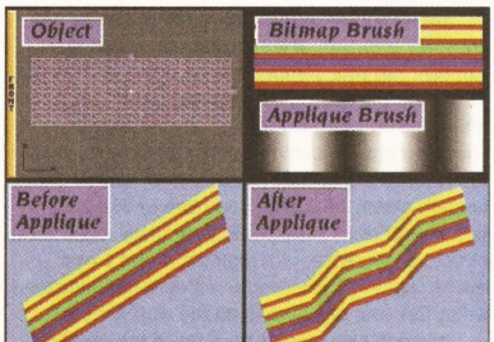
THE MANUAL

The only sensible way for a newcomer to get to grips with a program as complex as *Imagine 3* is to study the manual. So, pretending I was that newcomer, I got busy reading the manual – the perfect excuse I needed to stay in bed! "Over three hundred and fifty pages", I noted, after feeling the weight of this spiral-bound paperback tome. "Should be better than the last one!" Not one to judge a book by its cover, I turned to the interior, hoping that at last *Imagine* users would have a manual worth the paper it was written on, particularly since it was produced by an independent writer, not Impulse. At first glance the manual is well laid out and looks comprehensive, but once I started reading seriously I began to worry. Usually, there's a section which details just what kind of hardware you need to run the software, but I guess that since this manual serves the dual purpose of being for both the Amiga and PC versions of *Imagine* the author (and/or the folks at Impulse) decided to skip this part. Usually, there's a section which tells you how to install the software – though only a loose sheet of paper was included, almost as an afterthought. Usually. Impulse are anything but usual.

From the word go the manual oozes

REQUIREMENTS

Since Impulse don't specify any, I'd recommend the following: Accelerated Amiga with FPU, hard disk and at least 8MB RAM.



Imagine can now use a bitmapped image to actually alter the positions of the points in an object. Greyscale maps are used to move the points, the distance moved depending on the brightness of the tones in the bitmap.

inconsistencies, bad grammar and, at times, is seriously in need of both proof-reading and spell-checking. A good example is a reference made to the "knitting" of Bones. Could I find anything else about this? Could I flip!

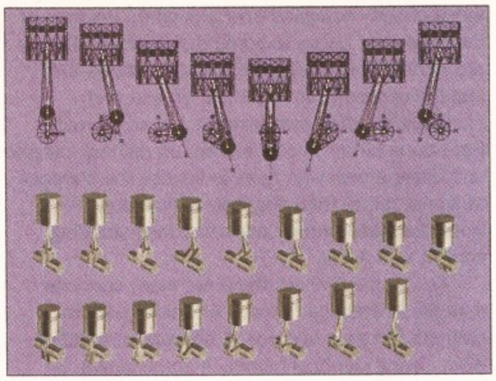
This was just the first of what turned out to be a series of rather confusing, and time-consuming, experiences. I'm not placing all the blame on Phillip Shaddock, the manual's author, because *Imagine* was obviously being worked on right up to release time and there's no way that Mr Shaddock could have got all the new features into the manual in time for simultaneous release with the software. But, since extra Readme files have been included on the disks, why couldn't *all* the new features which didn't make the manual have been documented in this way? As it is, the Readme files are in the main poorly formatted and often suffer from the slapdash writing style that has dogged Impulse in the past.

By now I was starting to get seriously worried. How would a new user, seduced into thinking that *Imagine 3* would beat the pants off the competition, ever get to grips with the program if I, a seasoned user, was having trouble figuring out just what was what? Over the next few weeks I worked my way through the chapters, trying out the simplistic tutorials and wondering why some of the major new features, such as Bones, were so poorly described. Frustrating? You bet!

Well, you didn't want to know so much about the manual, did you? What you want to know about is how the program shapes up. But I make no apologies for dwelling on the subject, for without the proper instruction it isn't particularly easy to get at the full power of the program. Sadly, I don't think this manual fully serves its purpose and I'm disappointed, because *Imagine 3* obviously *does* have a lot of power to offer. To be fair, all 3D programs have a long learning curve, which is where a thorough manual can provide a real kickstart. I'm just glad that Impulse aren't responsible for writing "How To Fly a Jumbo Jet" or "Teach Yourself Brain Surgery".

WHAT'S NEW?

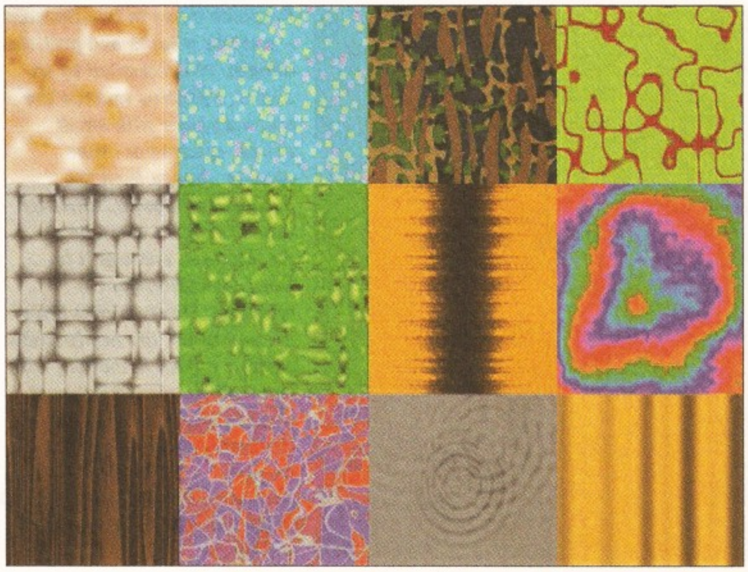
To their credit, Impulse have added a whole bunch of new functions and features, as well as made some significant improvements to the new *Imagine*. Foremost amongst these are States and Bones, which make the task of animating objects so much easier. Add to this a whole bunch of new textures, a simple particle system, a Spline Editor for constructing smooth shapes and converting PostScript fonts into *Imagine* objects, more animation effects (FX), significant improvements to several of the user interfaces and editing screens, Depth Of Field settings for the camera, better on-screen perspective previews (with the facility to manipulate objects interactively in the Perspective window), object deformation tools, Applique mapping (in other words, deformation mapping), camera and light lines, more lighting types (including venetian blind and panelled window effects), layering in the Stage and Action Editors to allow objects to be easily switched in and out of view and the new Associate function, which glues objects, lights or the camera to other objects and keeps them in relative positions whilst the parent object is being moved. Oh, and the ever-useful Zone Rendering feature has returned at last, after having been exiled when *Turbo Silver* was metamorphosed into *Imagine*. Anti-aliasing has been improved, and apparently rendering speed has been increased, though I was unable to fully verify this.



By setting up a series of poses as States (upper part of illustration) and using them as key frames, complex objects can be animated quite easily. I found it relatively straightforward to make this piston rotate correctly, something I'd previously found very difficult using the Cycle Editor.

TEXTURES

Imagine has always had some procedural (i.e. mathematical, as opposed to bitmapped) textures included, but they weren't particularly mind-blowing. Steve Worley's Apex Software capitalised on this shortcoming by producing their own *Essence* textures for *Imagine 2* and by so doing upped the usefulness of the program immeasurably. Impulse



***Imagine 3* now has over 100 built-in textures, of which this is just a small sample. Unfortunately, the hastily-written ReadMe file supplied as documentation fails to fully explain that some textures require that the object's axes must be rotated in order to work properly...**

What Ron Thornton thinks of Imagine 3

Ron Thornton is the co-founder of Foundation Imaging, who produce the computer generated graphics for TV programs such as Babylon 5. At present, they are working on the graphics for a re-make of the Dan Dare TV show.

"The World is doomed!... *Turbo Silver*, well, what can I say... all algorithm, no interface. Way ahead of its time in terms of features, behind when it comes to user-friendliness. Impulse has continuously ignored the prime directive when it comes to getting people to use their software.

There is a certain "us and them" discrimination which comes into play when programmers try to create user interfaces. This idea needs to be nuked as much as the idea of Sylvester Stallone playing "The Judge" (Judge Dredd for all you non 2000AD). *Imagine 3.0* has many features and some very powerful tools. They are, however, buried under a consistently bewildering user interface. Before I continue, I must say that in the last few weeks Impulse seem to have taken an interest in communicating with their users. This is good, and I hope they follow it through, because for a program that is so clearly targeted towards the animator and the film-maker, it cannot speak their language. In my opinion, *Imagine* rates as the second most difficult 3D program I've ever used, the most difficult being *Alias* on the SGI. This is a travesty as *Imagine's* power tools put some of the SGI big boys' programs to shame.

This is a perception program more than anything. If you know a lot about computers and 3D, then the learning curve on *Imagine* may not be so stiff, but if you are like me and just want to be able to make cool animations, then *Imagine* is not for you! In most programs an item is usually in two states: Selected or De-selected. Not so in *Imagine*; you can pick and select, pick selected, select picked, and pick your nose. Unfortunately, your nose will not change colour as much as *Imagine*.

Some people have done amazing things with *Imagine*, and I respect their perseverance. I suspect, though, that they have only persevered because of a lack of decent competition in the price range. The fact that Newtek are releasing *Lightwave* as a standalone 3D package might spur Impulse to improve their user interface.

All this will hopefully lead to Impulse shrugging off their arrogance and realising that the consumer is always right. I was one of the first people to buy *Imagine* and I wanted them to succeed. I called their technical support one day to help me with a problem. "Hey, we are having a table-tennis game, can you call back later?" The world is doomed!"

"Imagine rates as the second most difficult 3D program I've ever used."

What Richard Baguley thinks of Imagine 3

"*Imagine 3* has certainly been long awaited, but has it been worth the sleepless nights and hours of tearful longing? Ever since *Amiga Format* put *Imagine 2* on the coverdisk, many people have been waiting for the new version, with the promise of wonderful new things such as Particle Animation and Bones. So now that *Imagine 3* is finally here, how does it shape up against the competition?

First appearances can be deceiving, but the first thing that struck me was the lack of any change in the user interface which has always been quirky, to put it politely. I could quite easily have jumped straight from the first version of *Imagine* I bought (1.2) to this one and not have noticed much of a difference. There have been some changes (such as the addition of a user-definable tool bar), but the interface is still, more or less, the same as it was three years ago.

However, other programs have not stayed still. In contrast to the interface of either *Real 3D* or *Lightwave*, *Imagine* is clumsy and difficult to work with. Impulse have said that they are going to do some serious work on this for the next version, and it's not before time.

While we are talking about users, I really must mention the manuals. As somebody who was involved in writing manuals in a previous job, I'm glad to see that Impulse have improved on the abysmal manuals which accompanied *Imagine 2*, but they haven't gone far enough. The manuals contain (most) of the information you are likely to need, but I'm not overly impressed by the language or structure used.

Certain elements of the program are also missing completely; I wanted to find some information on how Depth of Field worked, but this was not mentioned in the index at all or in the contents. Neither was it mentioned in the section on "Setting up the Camera" or in the section on rendering or lighting.

There are a variety of new and extremely powerful tools in *Imagine 3*, including Splines, Bones and Particles. Although these are somewhat hidden away in the program, they are all great tools which make the process of creating complex 3D objects much easier. They are also extremely complex, and once again the manual does very little to help in the process of working out how to use these tools to their maximum effect."

"In contrast to the interface of Real 3D or Lightwave, Imagine is difficult to work with."

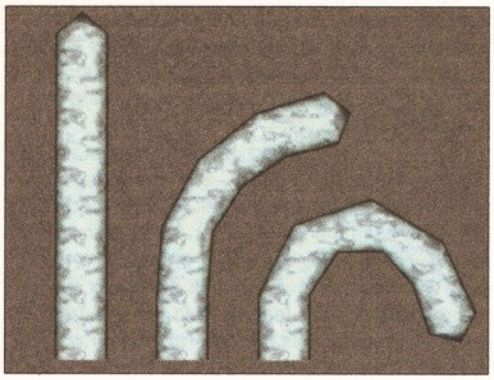
subsequently designed over a hundred textures of their own and I have to admit that many of them are rather cool, though personally it seems that instead of thumbing their nose at Apex and incorporating their own textures, Impulse would have done better to concentrate on refining *Imagine* and make a deal with Apex to license the Essence textures, rather than doggedly reinventing the wheel because of their apparent, long-standing, conflict with Apex.

As I've mentioned, there are many cool new textures in *Imagine 3*, many of which seem to emulate Essence textures in one way or another – even having identical names in some cases. By utilising States, textures can easily be made to morph over time between one setting and another, which can look great, and by using the LockState command when a texture is applied it's possible to 'tack' the texture down on to a shape-shifting object, thus eliminating the distortion which would otherwise occur.

A STATELY ADDITION

States are quite easy to use – once you've got the hang of them – but not so easy to describe. But let's try... *imagine* that you have modelled a robot-thing, composed of a group of individual components, which you want to walk. In *Imagine 2* you would either have had to make a whole series of individual objects for each part of the walk cycle (which could be twenty or more positions) and save them all before loading each into the Action Editor for subsequent animation, or you had to grapple with the rather awkward Cycle Editor and set up a series of poses for morphing. Although the Cycle Editor is still included for old-time's sake, it is now really defunct, as States replaces it with a much easier method.

Here's a simple description of how States works: first make your object – preferably in a simple pose, such as standing upright. Then create a new State for it, giving it a name such as First. Reposition the object by setting it to a new pose (e.g. the start of the walk) and make another new State called Second. Repeat this procedure until all the key positions in the walk have been made. Save the object and all the States will be saved too. Now it's as simple as using 'Set To' to select any of the previously-made States and voila!... the object will reposition itself to the way it was when that State was created. States also have the power to store colour and other properties and different states can be used to progressively change the



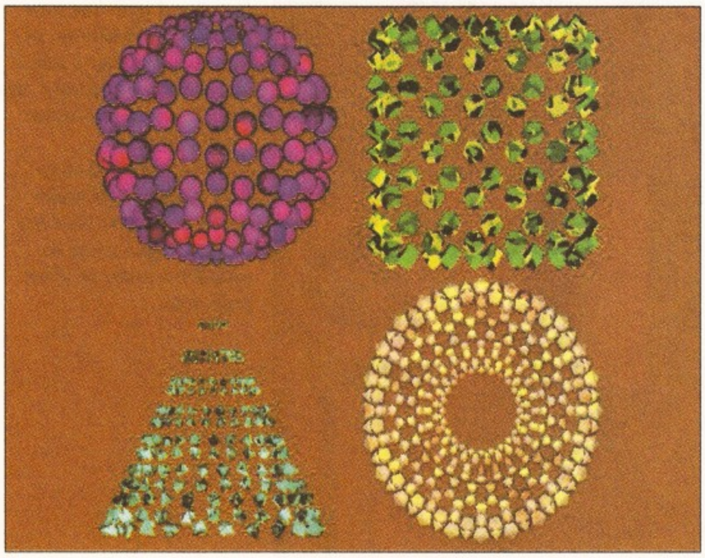
Bones, one of Imagine 3's strongest new features, are for moving an object smoothly through several key positions. By using grouped axes the object can be bent, moved and rotated, whilst its surface remains smoothly skinned. Unfortunately, the manual doesn't help much in explaining Bones, so many users might not even get this far.

colour of an object over time, for instance. States are very powerful things and will save a lot of time, as well as save memory and wrestling with the Cycle Editor, because now only the object and its States need saving, rather than a series of objects.

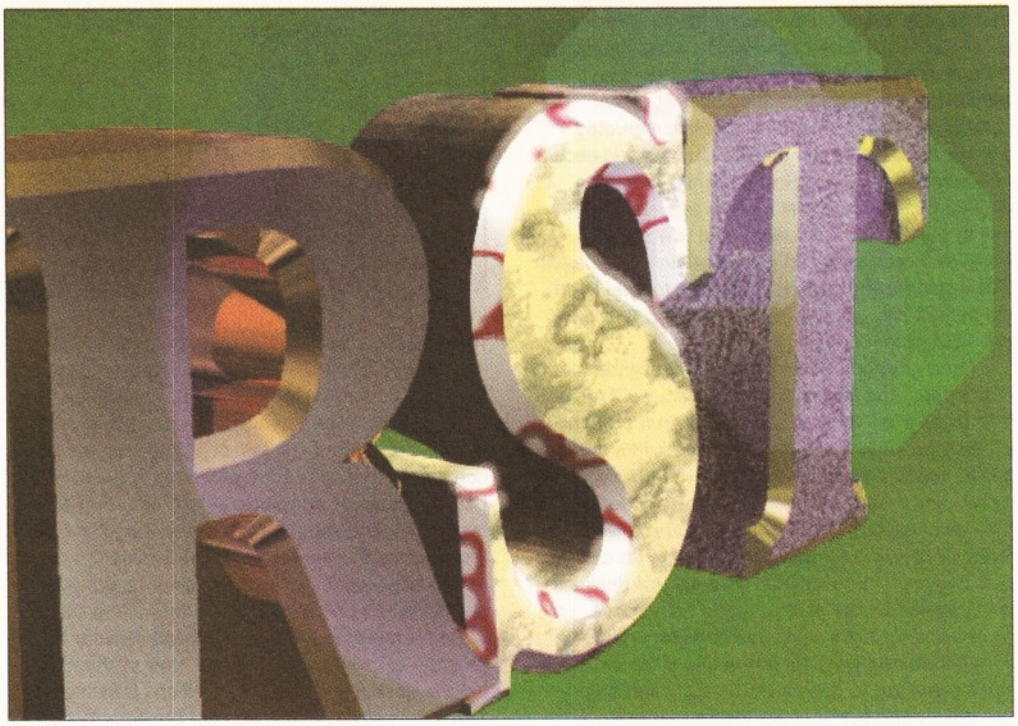
Once the States are prepared, they can be previewed using States Animation, which puts all the specified States together as a wireframe animation so as to check that any movement is as you require. The final renderings still have to be carried out in the Project Editor, but States Anim is a great testing ground for ironing out any motion niggles. Think of States as being Key Frame positions for characters. Each State can be recalled as required by the Action Editor, allowing complex loops to be built with a modicum of forethought. There's no doubt that States is a great addition to *Imagine*!

BENDY BONES

No Jim, not a reference to Dr McCoy. Bones are Impulse's method of making an object bend, flex and rotate whilst keeping its joints smoothly skinned. To explain further, Bones are a series of axes which are grouped within the object to be manipulated and which exert varying degrees of distortion over that object. By manipulating Bones and setting the resulting poses up as States, the object can be made to bend whilst keeping the joint areas properly skinned – just as the skin on your joints moves to accommodate the movement of



Particles come in two flavours – particle objects and particle effects. When applied to an object, Particles replace the original shape with small cubes, spheres or other objects chosen from the particles requester. However, these particles can't be manipulated and won't be seen until the object is rendered. The Particles Effect is used to set the newly-made particle object in motion, with some simulation of external forces (Gravity, Wind) though nothing approaching the complex collision detection routines available with Real 3D 2. By the way – particles EAT memory!



A welcome new feature is the Spline Editor, where Postscript fonts can be converted into gorgeous-looking text objects which can be extruded and bevelled, and used to build smooth (but only flat or extruded) objects. Note the lens flares and global haze effects in the rendered image. These too are new features, but I've seen better in other software.

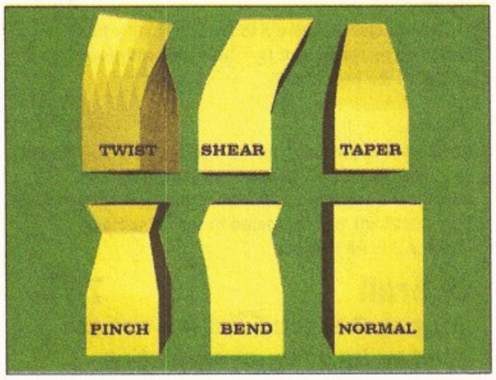
your limbs.

The trouble is, Bones are rather poorly explained in the manual and the tutorial goes little way to illuminating the actual mechanics of bone construction beyond referring to the Hand.Bon object (one of just two example objects supplied with *Imagine 3*). Figuring out how Bones *really* work is mostly left up to the user and if you can't make this small quantum-leap of reasoning and deduction, then I'm afraid you'll probably not get to grips with Bones at all. At best, understanding Bones isn't easy, but not having them fully documented is, in my opinion, inexcusable. After all, Bones are one of *Imagine's* strongest new features and it would help if we could use them without the prospect of suffering a nervous breakdown in the process!

THE SPLINE EDITOR

As it is currently implemented, the Spline Editor is capable of either converting and extruding Postscript fonts into three-dimensional objects with (or without) a selection of adjustable bevelled edges, or of making 2D objects which can then be extruded (and also bevelled). Any objects made in the Spline Editor must be exported to the Detail Editor for setting their attributes (colour, reflectivity, textures etc) but this is no big deal. Although Spline objects can be saved as they are – for subsequent reloading into the Spline Editor – they won't load directly into the Detail Editor, so they must be saved as standard *Imagine* objects, first by using the Add Points option and then by saving the resultant object, which by now will be made of points, rather than its original mathematically-based spline curves. Although the Spline Editor presently only allows an object to be made in two dimensions (as opposed to three in most other spline-based modelling systems) the resultant curves can be very smooth indeed, depending on the number of points they contain after saving as a points object. In fact, spline objects are both much smoother, and far easier to build than corresponding objects in the Detail Editor.

By using a system of 'knots', the spline curves can be moulded to any two-dimesional shape and the curves remain curved, no matter how radically the knots are pushed around. Splines could be used to make a variety of different shapes, one example being a kidney-shaped swimming pool made by first drawing its outline with splines and then extruding it with the Add Points function to give it depth. The addition of the Spline Editor is most welcome, especially considering the great job it does of making objects from Postscript fonts. Given a few more functions, the Spline Editor could easily become one of *Imagine 3's* new strengths.



A new set of modelling tools provide several kinds of deformation. How the object is affected depends on the type of deformation and where the object's axis is located.

THE VERDICT

Imagine 3 is undoubtedly a major improvement over its predecessor, but it appears that it has been rush-released (even after all the delays) and, as a consequence, it remains flawed. I find it inexplicable that known bugs, such as the quirky Slice function, still haven't been fixed and the poor descriptions of the more complex functions in both the manual and the additional Readme files do not

What Gordon Keenon of the 24-bit club thinks of Imagine 3

We asked noted 3D artist and secretary of the 24-bit club Gordon Kenon for his opinions of *Imagine 3*:

"Ignoring the manual, as usual, a quick double click on the program brings up the new *Imagine 3.0* title page with some nice new colours. The initial WOW! factor soon disappears when the program drops into the same old colour scheme and everything appears to look the same…

A quick flick across the menus soon showed all of the new features that had been added, so it was time to get the manual opened and to see if there were any tutorials explaining how to use these new features. The tutorials in the manual range from quite good to bloody awful. Bones, the much hyped feature of version 3 and the tutorial is nearly impossible to get working without a lot of head-scratching and hair-pulling. There should have been a more basic tutorial for a feature that is supposed to be so powerful, yet, once again, the users are left to try to work everything out for themselves. Maybe it's time for Impulse to drop their ancient user interface and think about updating it to something like *Lightwave's* easy-to-use and intuitive one.

One question that never seems to be answered in the pages of computer magazines [*Except in Amiga Shopper – Ed*) is who is expected to use this software? Anyone who requires a 3D package to do serious work quickly and easily will find that *Imagine* is costing them time and money. This is why *Lightwave* is so popular with the big boys of television these days. In business time is money, and with *Lightwave's* imminent release as a standalone product I do think Impulse will find the serious market closed to them. For the normal user who likes to do stills and the odd piece of animation *Imagine* is still a great piece of software for the money".

"The tutorial is nearly impossible to get working without a lot of head-scratching and hair-pulling."

What Alex Barregon thinks of Imagine 3

Alex Barragon is a long time *Imagine* user who has just received his first commission to produce an animated intro sequence for a CD32 game.

"I have been using *Imagine* for about a year and have just started my first professional project (I have been trying to break into the market for about eighteen months). My system is an A4000/030 with a 68882 FPU running at the same speed as the CPU.

I have been using *Imagine 3.0* for about two months since the upgrade offer from *Amiga Format* started shipping. Like most *Imagine 2.0* users, I waited with mounting excitement for version 3. I was surprised to find that *Imagine* only installs on to a Hard Drive as it will exclude those who do not own one yet. When run, the biggest shock was to come – the program takes over 2 megs of RAM, and does not support modular loading; this will totally exclude those with vanilla A1200s and A4000s that come with Commodore's measly Chip RAM only.

The copy that I am running at the moment is quirky when it comes to loading objects from any directory outside the *Imagine 3.0* root directory, causing read write errors on the Hard Drive at the same time. At the time of writing I am waiting for another copy to see if the same thing happens. Whilst in moan mode, the manual – it is better than before, but still awful. The new features are skipped over and the few tutorials are disjointed and incomplete. The information on the procedural textures is a 100 page doc.info file and very badly written.

For a 'Professional' program this is just not good enough. The Bones and States almost make up for the above gripes as they make animation easier and faster to put together and if the object manipulation problem is a one off, then they and the procedural textures more than make up for the manual – well done lads (at Impulse). The AGA modes now work and the pallete lock for animations work, saving time on processing individual frames so that programs like *DPaint IV* can now directly load Imagine generated animations.

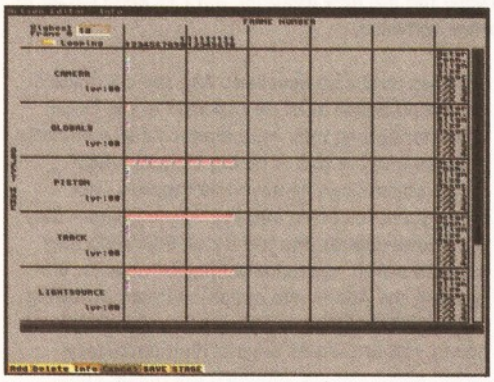
I think that *Imagine 3.0* is a very good program, but considering the delay, it should have been more polished than it is".

" Whilst in moan mode, the manual; it is better than before, but still awful."

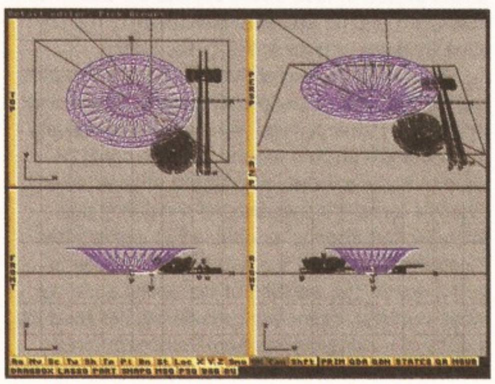
exactly inspire confidence. Heck, there's even a requester in the program which includes the words "Minnimum" twice! And isn't it about time an autofacing function was added so that planar objects can easily have their faces constructed without resorting to the time-consuming add-each-face-yourself method? *Sculpt 3D* had this in its original release, and that's years ago, so why doesn't *Imagine* have it now? And why aren't *Imagine 2* projects directly compatible with *Imagine 3*? I would have expected to be able to load in an old project and use it straight away, but that's not the case. Bummer.

More attention to detail and the enlightenment of the user, and less of the "just wait, we'll cram that feature in even if we can't explain it properly" attitude would be welcome. Much as it irks me to say it, Impulse have done themselves no favours by keeping their customers mystified and left to their own devices to find out what *Imagine 3* is really capable of. No on-disk examples, no funky disk images – nothing! Still, from my few dealings with Impulse on the phone, that's no surprise. I'm all in favour of folks being independent and doing things their own way, but in the end if the buyer can't easily get to grips with the software, then I can guess who the ultimate losers will be.

I find it disturbing that, as a long-term *Imagine* user who has often championed this program over the years, I've written a review which puts this new version in a rather different light. Impulse state that they listen to users' requests. So why no '040 version, why haven't known bugs been fixed, why are the requesters still non-standard (and not even consistent throughout the program), why doesn't DXF conversion work properly, why don't fonts load into the Detail Editor any more, why no ARexx port, and why the still-confusing documentation? I could go on, but I won't – it's too depressing. All I can say is that as an upgrade *Imagine 3* offers OK value for money but if I had to recommend a 3D program to a first-time buyer I'd have to think twice before recommending this one. Sorry Impulse, but that's my opinion – despite your belated (though obviously valiant) efforts at getting *Imagine 3* up to scratch and out of the door. *Imagine 3* is good, but it should have been a lot better! Nonetheless, I won't be ditching my copy just yet... AS



The Action Editor has been refined and made more functional. More FX lines have been added, along with cut and paste for time lines and some new FX have been added – including a global one for lens flares and a simple particle effects system.



In addition to having more tools a new – and very welcome – viewing mode (called NewMode) has been implemented so that an object, and its points and faces, can be directly manipulated in the Perspective window. NewMode also works in the Stage Editor, allowing a scene to be interactively set up in 3D space – redrawing any changes in real-time, including camera positioning. Observant readers will also notice the extra line of user gadgets at the bottom of the screen.

WHAT
Imagine 3 – £93.45
WHO
Impulse Inc, 8416 Xerxes Ave. N., Brooklyn Park, MN 55544, USA. ☎ 0101 612 425-0557 Fax: 0101 612-425-0701.
WHERE
Meridian (081 543 3500)

CHECKOUT
IMAGINE 3

Documentation — 65%
Looks good, but doesn't bear detailed examination. Vague, incomplete and lacking depth are descriptions which spring to mind. Let's hope that Apex are still planning to release "*Understanding Imagine 3*"!

Ease Of Use — 75%
To be fair, no 3D programme is easy to use and Impulse seem to have made sterling efforts to improve their system, but it's not easy to use a program that doesn't have complete documentation and is as complex as *Imagine 3*.

Features — 90%
Many good new features have been added but some of the basic ones still need fixing, updating or improving.

Quality — 90%
Like other 3D software there's no doubt that *Imagine* can, in the right hands, produce excellent results, but getting there can be something of an uphill struggle.

Speed — 75%
I truly expected *Imagine 3* to be significantly faster – and in some respects it is – but it can still take ages to render to the best quality.

Price — 60%
If you were to pay full price for this software you'd need your head examined. By all means upgrade from *Imagimne 2* (around $110 from Impulse, or around £93 from Meridian), but compared to the competition *Imagine 3* is no bargain.

Overall — 76%
Imagine 3 is good, but it's not as good as its price, or reputation, suggest. Think very carefully about the alternatives if you are buying from scratch.

Texture Bending

BEST BUY

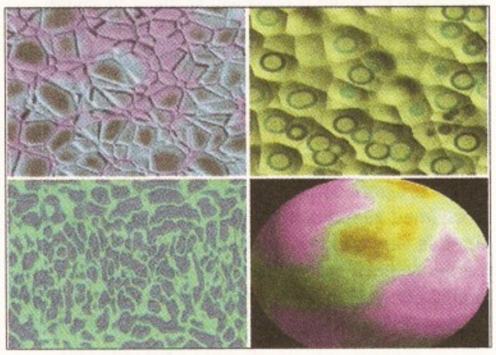
Feeling left out of the textures scene? Gary Whiteley looks at Forge, an innovative texture-bender and renderer from Apex Software.

Over the last couple of years, West Coast-based Apex Software have worked very hard to provide the best algorithmic textures around for Impulse's *Imagine* software. With their *Essence I* and *II* sets, whole new worlds of creativity were opened up to Imagine users bored with the few textures provided by Impulse. In fact, the *Essence* textures are so good that they stand out on *any* computer platform, not just the Amiga.

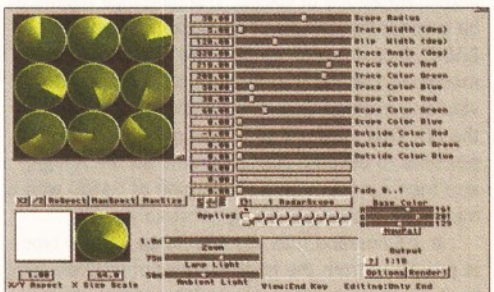
But there are a couple of problems with *Essence*. The first is that the textures only work with *Imagine*, effectively putting them out of the reach of other 3D modelling software such as *LightWave* and *Real 3D*. The second, and more troubling problem for *Imagine* users, is that it is necessary to set up a texture and then render it to appraise its effectiveness. If the texture was changing over time, this would mean rendering several different frames from the animation to ensure that everything looked right. The trouble is, this experimentation and rendering takes time and effort – and time is something that a busy 3D-er doesn't often have to spare. So, Apex have come up with yet another innovative program – *Forge* – to enable users of both 3D and paint software to incorporate *Essence* (and *Imagine 3*) textures into their work. *Forge* doesn't let other 3D programs use the textures directly, rather it allows them to be manipulated and rendered as bitmap images which can then be imported by the paint or 3D program and wrapped or altered as appropriate. It's not the ideal solution, but short of porting *Essence* to work with other software (which Apex have actually been doing), it's the best compromise so far. *Forge* has three main purposes – to manipulate existing textures easily and quickly with on-screen previews as the various parameters are changed, to make and preview animated textures which can be saved as bitmaps, and to render texture images as bitmaps for use in any suitable software.

BEND ME, SHAPE ME

Being able to directly manipulate a texture and see the results is in itself very useful. Not only does it save loads of time, but it helps you to understand how the textures work and what parameters do what – something which wasn't always apparent when using *Imagine*. Now it's just a matter of shifting the sliders and seeing what happens, because the changes appear quickly in the preview window. But *Forge* goes further. It's also possible to layer up to nine textures together for some really complex effects. And once you're happy with what you see, just save the new settings as an Attributes file and you can recall it any time you want. The only problem will be describing the resultant texture. Steve Worley (the author) has obviously already had such trouble – hence the crazy names of all pre-defined Attributes files! Because 3D textures aren't always actually 3-dimensional, there are a variety of different views which can be selected so that the effects of applying a certain texture or attribute file to an object can be evaluated. For instance, a texture which is designed for planar (2-dimensional) wrapping won't look right if it is incorrectly wrapped, so the choice includes planar views in all three dimensions, as well as three spherical views (top, side and front), spherical and cylindrical wrapping and repetitive views (for making seamless tiled textures). Lighting values and direction, and dithering and highlights can also be defined.



Four 24-bit renders from Forge.



Forge allows control of all of an Essence or Imagine texture parameters – even to the extent of animating them where possible. The Preview window shows nine time slices in a 3x3 matrix. Clicking on the small window below animates the sequences for almost instant animation preview.

One of *Essence's* strengths is that most of its textures can be made to change over time. *Forge* provides a way of both setting and previewing the animated changes and then lets the user preview their effects in real-time. By defining the parameters for both the start and end textures, setting up an image matrix and then clicking on the small on-screen window, a miniature animation can be viewed at various frame rates. This feature is invaluable and saves huge amounts of experimentation time.

RENDERING FOR ALL

For non-Imagine users this is probably the most valuable part of *Forge*. Single images and animated sequences can be saved out as IFF24, TIFF, JPEG or PPM bitmaps, allowing users of other software to incorporate *Essence* textures in their work – on any compatible computer, including PCs and Macs. For animated sequences just set the number of frames required, the format, anti-aliasing level and rendering size and render away. *Forge* is even intelligent enough to take the given file name and number it accordingly. So if your software requires images to be named Image001, Image002 etc, just enter Image001 as the first name and *Forge* will do the rest automagically. The downside to rendering bitmaps is that they can take a long time, especially at large resolutions with high anti-aliasing settings. but that's just a fact of 3D life. *Forge* also supports ARexx and comes with a few scripts to display its images on various graphics cards – including OpalVision, EGS and FireCracker 24, though the only card directly supported is the Picasso II with RTG. *Forge* works on AGA machines too, where it can output in 256 colours.

The best thing about *Forge* is that it is easy to use and any changes can be quickly observed. That's not to say you'll see them instantly at the best possible quality, because *Forge* draws its preview in chunky steps, refining the images with each pass, so it may take a minute or so to get the best quality preview. This method makes it easy to see if you've got the effect you want without having to wait ages to find out for sure. When it looks about right, let the preview render fully for a final check. Even while an animation is being previewed *Forge* keeps updating its screen, so the animation preview looks better over time as well. AS

WHAT
Forge – US$30
WHO
Apex Software Publishing ☎ 0101- 415-322-7532.
WHERE
Direct from Apex Software Publishing, or free as part of the Essence textures bundle £99.95 from Meridian Software Distribution ☎ 081 543-3500.

CHECKOUT
Forge

Documentation: 90%
Good, easy to read, but *Forge* is easy to use without it.

Quality: 95%
Excellent output from *Essence* and *Imagine* textures, especially with anti-aliasing on.

Features: 90%
Enough for most 3D people to find indispensable.

Price: 100%
Even better, *Forge* comes free when you buy an *Essence* texture set. If you already have *Essence* you can buy *Forge* for US$30 direct from Apex.

Overall: 93%
Serious 3D animators and graphics designers will find Forge and Essence a great boon to their work.

BACK TO BASICS

Is version 2 of HiSoft's BASIC really the BASIC of the '90s ? Simon Green is not entirely convinced.

The BASIC programming language was originally designed in the 1970s for teaching beginners the rudiments of computer programming. Since then it has become hugely popular, and has evolved in ways that its creators probably never imagined. HiSoft Basic was one of the first commercial implementations of BASIC for the Amiga. The first version was released in the late '80s, long before the likes of AMOS and Blitz Basic were even dreamt of. At the time its only real competitor was Amiga BASIC, which was given away free with early versions of Workbench. In fact, many people regarded it as the BASIC that Amiga BASIC should have been in the first place. The language gained many fans (including myself) through its speed and ease of use, and it was even used by Rombo to write the early versions of the frame grabber software for their Vidi digitisers.

Now, more than five years on, HiSoft have released the long-awaited second version, which they have imaginatively titled HiSoft BASIC 2 (HB2). Amiga BASIC is no longer with us, and the Amiga programming language market is now a lot more competitive. So what has HB2 got to offer ?

LOCK AND LOAD

The package comes supplied on a single disk, but decompresses to about 3Mb on a hard disk, or on to three separate floppy disks. The files you end up with include the editor, compiler, debugger, various tools, include files and a selection of example programs for each version of Workbench.

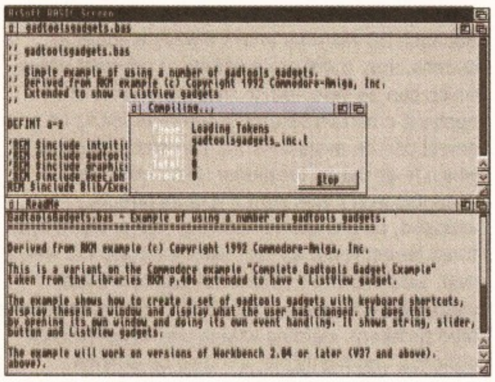
Installation of the software is performed using the now standard Commodore "Installer" utility. This auto-configures to your particular system, and copies across all the necessary files. On the whole it works well, and is very user-friendly, but I still managed to crash it once whilst trying to install some of the examples. In the end I had to un-archive them by hand, using the good old-fashioned CLI. So much for progress.

CREDIT TO THE EDIT

The system is based around the same excellent editor program which is used in HiSoft's critically acclaimed assembler system, DevPac 3. The editor itself is very fast and intuitive to use, and is certainly much better than Blitz Basic's rather quirky offering. It supports multiple windows, which makes it very easy to refer to other files whilst you're working, and to cut and paste between different programs.

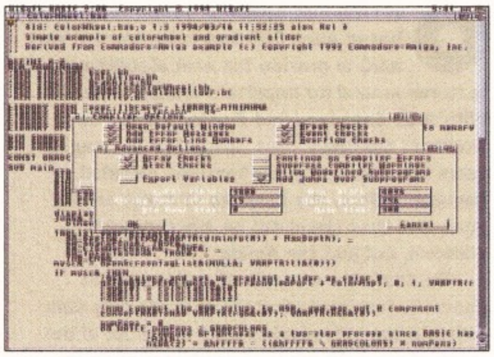
It also includes everything else we have come to expect from modern text editors, including a macro facility, search and replace, bookmarks and cut and paste. Another nice touch that I noticed is that all the requesters multitask. This means that you can, for example, still edit the program whilst the compiler options requester is on the screen. Users of Workbench 1.3 will be pleased to hear that there is a special version of the editor that gives them the same look and feel as those lucky 2.0+ users.

HiSoft BASIC 2 provides what people these days like to call an integrated programming environment. In plain English this means that everything you need to write programs, including the editor, compiler and debugger, are available from a single screen. To write a program, all you need to do is type it in to the editor and then select "Run" from the menu and within seconds your program is compiled and executed. In fact, HiSoft aren't lying when they say it's a "compiler that feels like an interpreter". They also claim that the compiler is up to 50 per cent faster than the previous version, and subjectively it did seem somewhat swifter. The code it produces is also supposedly faster and more compact.



The compiler is very rapid, and the code it produces is fast and compact.

As you'd expect from a reputable company such as HiSoft, the software seems to be very stable and reliable. It hasn't yet crashed on me, but it did give a few spurious "out of memory" errors at one point.



HiSoft BASIC 2's multi-window editor makes writing your programs a pleasure.

DEBUGGER IT

The package comes complete with a debugger program which you can use to try and eliminate those hard to avoid bugs from your programs. It is in fact a special version of Hisoft's powerful symbolic debugger/disassembler *MonAm*, as used in their assembler, DevPac 3. It allows you to view the source code (i.e. the BASIC program), the object code (the machine code the compiler generates), and the contents of all the relevant machine registers and memory locations, as the program runs. You can execute the program an instruction at a time, set breakpoints, and examine the contents of variables as they change. Useful though this can be, I'm not sure whether this low level approach is really what is needed for a BASIC debugger. *MonAm* is no doubt very powerful, but it is also hideously complicated and quite difficult to use. There are no gadgets or pull-down menus here, just a selection of difficult to remember keyboard commands. One look at the screen will probably be enough to scare most beginners away for life. However, you can still debug your programs the old way, using TRON (Trace On) and TROFF (Trace Off), and so *MonAm* is just a useful bonus.

COMPATIBILITY

The documentation makes a lot of the fact that HB2 is highly compatible with other implementations of BASIC. The language claims to be compatible with most flavours of Microsoft BASIC, including old versions as found on CP/M machines and the Commodore 64, and new-style versions such as QuickBASIC and Visual Basic on the PC. This means that in theory it would be possible to develop your programs on the Amiga, and then run them on a PC version of BASIC with a minimum of changes being necessary.

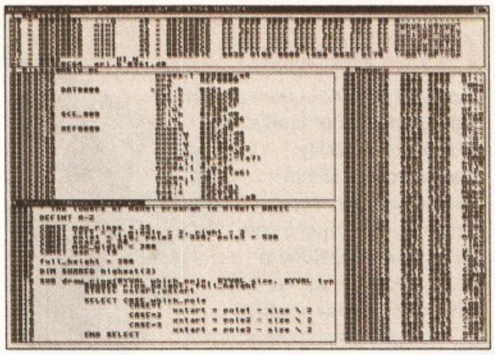
It also means that you should be able to type in programs from the huge number of programming books that have Microsoft BASIC listings, even if they aren't specific to the Amiga. The language is also compatible with Hisoft BASIC 2 on the (dare I mention it) Atari ST, and with old Amiga BASIC. I was pleased to see some of my old Amiga BASIC programs running again, but I can't see that portability will be a significant selling point for the

REQUIREMENTS

- At least 1Mb RAM
- 2Mb and a hard disk recommended
- Any version of Workbench, from 1.3 to 3.1
- Compatible with all 680x0 series processors

JARGON BUSTING

BASIC – "Beginners All-purpose Symbolic Instruction Code." A very silly acronym for what is a very straightforward programming language.
Compiler – a special program that converts a high-level language, such as BASIC, into a lower-level language (usually machine code).
Debugger – a special piece of software designed to help programmers eliminate errors (or "bugs") from their programs (see "Blits and Bobs").
Portability – not how easy it is to carry something, but how easy it is to transfer a program from one computer system to a different one. The act of converting a piece of software to run on a different system is often known as "porting".
Operating System – the collection of software, partly held on the Kickstart ROM and partly on the Workbench disks, that makes the Amiga appear and operate the way it does.
Libraries – collections of frequently used functions, stored in the Kickstart ROM or on disk in the "libs:" directory, which can be called by other programs.



The debugger may look complicated, and it is, but it can be an invaluable tool in getting your programs to work properly.

majority of Amiga users.

OPERATE YOUR SYSTEM

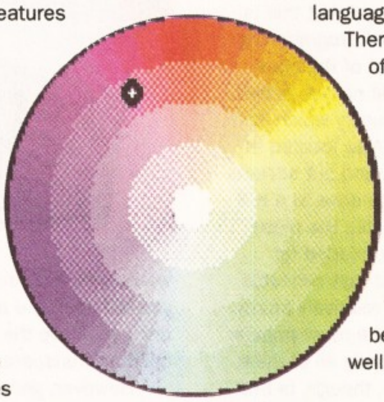
One of the major features of HiSoft BASIC 2 is its ability to call functions from the operating system libraries. This makes it possible to do many things that are not included as commands in the language itself. The package comes complete with all the files necessary to access all the features of the Amiga operating system, whether you're using Workbench 1.3, 2.0, 2.1, or 3.0. The package includes example programs that demonstrate how it is possible to use library calls to do such things as loading IFF pictures, playing sound samples, and creating Intuition gadgets and menus. Unfortunately, many of these examples are ridiculously complicated. One of them is more than 100 lines long, and all it does is play a short beep noise! To be fair many of them have been translated directly from Commodore's examples written in C, and programming the OS is necessarily complex, but they do not do much to encourage the beginner. HB2's lack of structured data types makes creating the necessary system structures a very messy and tedious affair, with lots of unsightly PEEKing and POKEing. The language does include a new "TAGLIST" command that makes it easy to create taglists for calling Workbench 2.0 functions, but this does not do much to remedy the situation.

I can't help thinking that if you want to do a lot of this sort of thing, you would be better off doing it in a language such as C that was designed for systems programming, and didn't just have it stuck on as an afterthought. On the other hand, it would have been difficult to support OS programming elegantly without radically altering the language (which is the route taken by Blitz Basic 2). To make full use of the operating system you will need to buy copies of the Amiga ROM Kernel Manuals, since very little description is given in the HiSoft manual. Fortunately the manual does include a section on how to read C source code and translate it to BASIC. In my opinion the package's support for operating system calls doesn't really make up for the lack of features in the language itself. I would have liked to at least have seen built-in commands for loading and saving IFF pictures.

AGA SUPPORT

Lucky owners of A1200 and A4000 machines will be glad to hear that the SCREEN and PALETTE commands in HB2 now fully support the AGA chipset. This means that it is now quite possible to open 256 colour screens on the Workbench. However, the OBJECT commands, which are used to control hardware sprites, do not seem to have been changed to take advantage of the new sprite features of the AGA chipset.

One of the nice things about Hisoft BASIC 2 is that it is a very pure version of BASIC. This makes a nice change from AMOS and Blitz, both of which have added so many commands that the language is almost unrecognisable. There are no restrictions on the size of arrays, the length of variable names and labels, or the number of parameters in a subroutine. And I was glad to see that it distinguishes between passing parameters to subroutines by value and passing them by reference, which is a first for BASIC. The documentation is excellent, being both beautifully typeset and well written. It includes a user guide, a command reference section and a very nice tutorial for beginners. In fact, my only real gripe is that the manual is very thick (640 pages) but is not ring bound, which means you need a complicated arrangement of heavy objects just to keep it open on your desk.



You can use HiSoft BASIC 2 to create programs with standard Intuition gadgets, including this very pretty colourwheel selector.

SETTING AN EXAMPLE

For me, the most disappointing aspect of the package was the example programs. Frankly, they're just too boring. The first thing anyone is going to do once they've installed the package is to try out the examples. Unfortunately, the majority of the programs are simply examples of how to call various library routines, and the few remaining ones (which include an old program that solves the Towers of Hanoi problem, and some strange fractal generators) are not very impressive. I would liked to have seen a few complete applications or utilities written in HB2 to demonstrate the possibilities of the language.

The package also includes a number of tools, including the truly awful "Object Editor". This seems to be entirely unchanged since its AmigaBASIC days, but unfortunately it is the only practical way to create sprites for use in BASIC.

CONCLUSION

I find it difficult to see who exactly HiSoft BASIC 2 is aimed at. Its initial simplicity and ease of use would seem to make it ideal for beginners, but its relative lack of exciting features, and the fact that you have to resort to calling OS libraries just to load or save IFF pictures or play sound samples will put many off. People who are planning on doing a lot of operating system programming would probably be better off using C instead. And if you're thinking of using HB2 to write fast-moving games or create demos, forget it.

Although I was impressed by the professionalism of the product as a whole, in the end I found it hard to get excited about HiSoft BASIC 2 (mind you, I might just have been in a bad mood). If you're looking for a solid, reliable and portable implementation of BASIC for the Amiga, and you're not worried about high speed scrolling and bobs, then HiSoft BASIC 2 could be just what you're looking for. AS

BLITS & BOBS

The biggest mistake in the HiSoft BASIC manual is that it suggests that the term "bug" (used by programmers to mean an error in a program) was coined after a real insect was found inside an early, malfunctioning computer. This is a well known piece of urban folklore and is completely untrue. In fact, the term "bug" has been used to mean a design defect since as far back as Edison's time. Amazing, but true.

WHAT
HiSoft BASIC version 2 – £79.95
Upgrade from
HiSoft BASIC 1–$39.95
WHO
HiSoft ☎ +44 525 718181 Fax: +44 525 713716
WHERE
HiSoft
The Old School, Greenfield, Bedford MK45 5DE



When using operating system calls, it is even possible to make use of Workbench 3.0's datatype facilities to display IFF pictures.

CHECKOUT
HiSoft Basic 2

Features **75%**
The package offers a modern and portable implementation of BASIC, but it would be nice to have a few more Amiga-specific commands in the language.

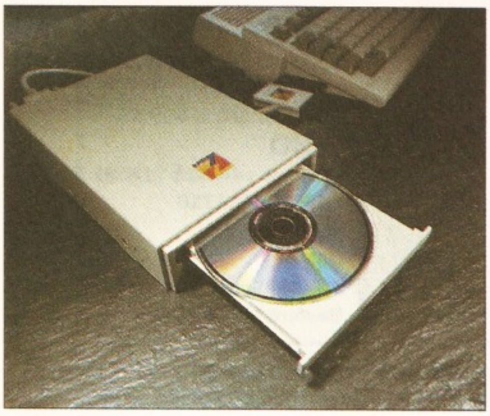
Documentation **90%**
Nicely laid out and well-written, with a good tutorial section. It's just a shame it's not ring bound.

Ease of Use **80%**
The programming environment and the language itself are very easy to use, but the debugger and operating system support can be very complicated.

Performance **85%**
The editor is fast, compilation is rapid, and the finished programs are pretty nippy too.

Price **80%**
Quite reasonable for a product of this quality.

Overall **85%**
The most professional implementation of BASIC on the Amiga, but you might have a lot more fun with AMOS or Blitz Basic 2.



Zappo A1200 CD-ROM

Graeme Sandiford previews one of the first competitors to Commodore's A1200 CD-ROM drive.

It has been a couple of months since Commodore announced that they had finished work on a CD-ROM drive for the 1200. But, already several large distributors are stocking a rival drive. The drives that most UK suppliers are selling have been manufactured by the French company Archos. The drive we will be taking a look at is a pre-production model of the Zappo Overdrive – this also makes use of the same mechanism.

This drive aims to be the replacement for Commodore's own, and offers many of the same facilities. It is a twin-speed and multi-session compatible drive that emulates the AIKIKO chip. It is based on the Mitsumi FX001 drive, which was reviewed in issue 39's *Window Shopper* section (see page 60 for back issues). As the drive is fitted externally, it now sports a new plastic casing. The drive also achieves a high level of compatibility with the CD32, and should have 3.1 system emulation, although this was not fitted to this pre-production model. It measures approximately 15x4x22cm and is sturdy as well as being compact.

The main feature that distinguishes this drive from Commodore's is the manner in which it will be attached to the 1200. Instead of connecting to the computer via the trapdoor slot, the Overdrive CD-ROM is attached to the 1200's PCMCIA slot. The advantage of this method of connection is that the expansion port will be left free for other devices such as memory expansions. Although Commodore's drive can take on 4Mb memory on-board, you will not be able to add an accelerator. The PCMCIA port is only 16-bit, so some people thought that attaching the drive to this port would slow down the transfer of data to the machine. However, so far I have not encountered many problems. Although, one or two CD32 games did seem to run a little slower than usual, but this is probably due, in part, to the games' programming rather than the drive itself, as most of the ones that worked with the drive did so at normal speed.

The drive has its own power supply which is plugged into the back of the unit. Also located at the rear of the drive is its audio in and out sockets – these can be used to connect the drive to a hi-fi or other audio equipment. This is also the place where you'll find the 25-pin socket needed for connection to the A1200. The lead that connects the two appears quite simple and relatively sturdy.

We managed to test a few of the most popular CD32 games with the drive and nearly all of them worked. One thing to bear in mind, though, is that the CD32's controllers have six buttons. As a result, a number of the games have been programmed to utilise as many of the buttons as possible, so you will require a CD32 controller in order to play them effectively.

Of course, being the serious-minded Amiga-owners that you are, you will want to do more than just play games with a CD-ROM drive. So, you will want to know what serious functions you can perform with the drive.

Well, as it is a twin-speed drive, you can play audio CDs as well as CD-ROMs – no matter how tasteless they may be. To help you in your audio exploits, a program is supplied to play music CDs – it is pretty much an updated version of the old CDTV player. It's quite basic, but it does the job. As you would expect, the sound quality is of a similar standard to most similarly priced CD players, but don't expect full hi-fi quality sound if you put it through your monitor.

One of the main advantages of CD-ROM as a storage media is the sheer volume of information you can store on a disc. Of course, it's all very well being able to store huge amounts of data, but it's pointless if it will take forever to access it. As the drive is a twin-speed model it can read data at a pretty respectable 300K per second and the seek time is also quite acceptable.

As the drive is also multi-session compliant it can be used, in conjunction with PhotoCD, to obtain photographic-quality images for all manner of graphical projects (see PhotoCD box).

If you wish to access any information you may have on CD-ROM, be it data, images or software you can copy and execute files or programs as you would with a normal disk drive. In order to do this you will need the appropriate driver software – once you have the software installed its use become transparent.

However, games are another story altogether. To use most games you need to boot the machine with the disk or disk inserted. But, how would you do that with a CD-ROM? If you boot up with a disc inserted the computer can't access it until the necessary driver software has been run. To get round this problem you need some way of informing the computer that you want to use this drive to boot-up and to access the drive. To achieve this the Overdrive CD-ROM, once installed, makes use of a boot-up option. It's similar to the one already present in the 1200's ROM, but instead of holding both mouse-buttons at startup you need to hold just the left one. You'll then be presented with the option of booting up normally from floppy or hard disk or booting from the CD-ROM drive.

Our first impressions of the drive are very good. For one thing it actually works, and, what's more, it appears to work at a decent speed. It has also done quite a good job of emulating the CD32's AIKIKO chip, and has therefore achieved a high degree of compatibility. This really does seem a good alternative to Commodore's drive, and I am really looking forward to getting my hands on the completed version. AS

SPECIFICATIONS

- Multi-session capable (can be used to access PhotoCDs)
- Emulation of AIKIKO chip (improves compatibility with CD32 games)
- Twin-speed capable (approx 300K per second)
- Workbench 3.1 emulation is planned

PHOTOCD



Kodak's PhotoCD is an increasingly popular method of producing photographic-quality images from a 35mm camera film. You simply send off your film and you will receive a CD-ROM in return. This disc will contain the professionally-scanned images taken from your film. PhotoCDs are multi-session compatible – this means they can be written to more than once, and this is why you need a multi-session capable drive to access PhotoCD images.





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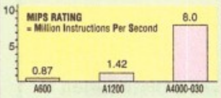


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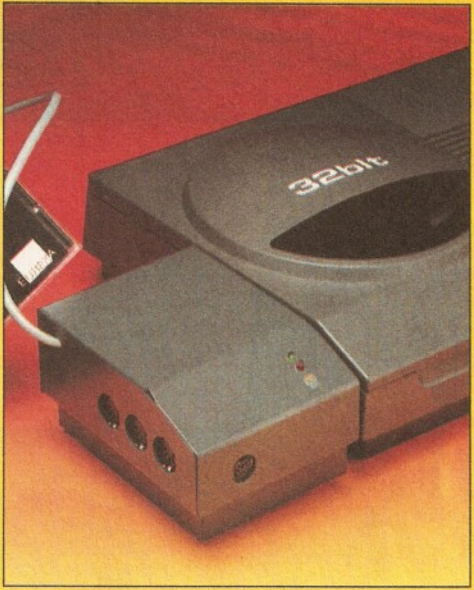
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Communicate!

Graeme Sandiford is suitably impressed by Communicator – a new tool that enables your CD32 to communicate with any Amiga.

When the CD32 first came out, most Amiga owners were very impressed, and rightly so. Several people sold their Amigas as soon as they could, but a few discerning ones waited to see if they could have their cake and eat it by integrating the CD32 into their current Amiga set-up.

The CD32's predecessor, the CDTV, has been linked successfully with other Amigas for some time, using systems such as Parnet. However, the CD32 lacks a Parallel port, so other leads and software had to be developed. Once this was accomplished, you were able to pass files back and forth between machines. But, this is not enough for the machine to be truly integrated into your system – for this you would need a level of interactivity that is not provided by the current software... enter the Communicator.

The Communicator is a hardware/software package that not only gives the CD32 a serial-link with another Amiga, it also provides midi ports and a keyboard. The software suite not only provides a data-link to transfer files, it effectively hands over complete control of the CD32 console to the remote Amiga. As well as this, it gives the remote machine access to PhotoCD and provides limited titling abilities.

The Communicator unit itself is quite small, measuring around 2.5x3.5x4.5 inches, and is coloured a dark grey to match the CD32's casing. It slots into the auxiliary port that is found on the left-hand side of the CD32. Its midi ports are located on the Communicator's left-hand side, its keyboard socket is placed at its front. The serial lead that will connect to the Amiga also goes out from the left-hand side of the Communicator.

The installation of Communicator is very straightforward and should cause no difficulties even for a relatively inexperienced Amiga-user. The unit simply slots into the CD32's auxiliary port and the serial lead is attached to the rear of the Amiga. The software installation is just as easy. All of the CD32's software is stored on a single CD-ROM. The Amiga's software is provided on a floppy and has an installation script to install the main program and supporting shareware on to your hard drive. You can also use the program on hard drive-less systems, but the program does require a 1Mb of Chip RAM.

The software that is on the CD-ROM includes *PhotoLite* – a PhotoCD displayer, *Communicator* – the software that will receive instructions and data from the remote machine, *Twin Express* – a shareware file-exchange program, and a copy of Workbench. *PhotoLite* is simply a PhotoCD image displayer – as such, it can't save images to disk or convert them. After running the program, you need to insert a PhotoCD disc. You can then move from image to image using the forward and backward controller button. Alternatively, you could use *PhotoLite's* carousel mode. This will display each image in turn, just like a slideshow. However, the images can take up to a minute to be displayed.

One of the Communicator's most impressive abilities is to be able to execute *Scala* multimedia scripts. To do this, however, you will need to place EX in your *Scala* Startup drawer (you can obtain this from your *Scala* dealer). Once this is installed, you will be able to trigger multimedia events remotely – play samples, display images and even play back MPEG video sequences, all under the control of *Scala*.

Twin Express is a shareware program that will transfer files at speeds of up to 115200 baud. It acts a bit like a replacement for the Amiga-Shell, it has many of the same commands and conventions, such as DIR and CD. The major difference is that whenever you prefix a volume with a ~ symbol it automatically access the remote machine. Aside from this difference you can move, copy, and delete files as you would in Shell. Naturally, as this environment is a command line interface, you will need a keyboard to make full use of *Twin Express* from the CD32's end. You can attach an A4000 keyboard to the socket on the front (we've also been informed that the production model will have a socket for a A2000/A3000 keyboard as well).

The main program that will be used on the controlling Amiga to access data and control the CD32 is *CommBook*. It has actually been written in Helm, and comes in two versions *CommSmallBook* for machines with 1Mb of Chip RAM and *CommBook* for Amigas with 2Mb of RAM.

On running the program you are first greeted by the Message page. Along the bottom of this, and indeed every, page there are icons that will take you to a different page. Each page has its specific use. You will also find the standard 'tape-recorder-like' play, pause, stop, forward and backward buttons. These buttons serve different functions, depending on which page they are used.

The Message page controls the CD32 presentation program. It can be used to send messages to the CD32 – these messages will then appear on the CD32's screen. To enter a message you can type straight on to the Message screen's text window. The text window is actually more or less of the same aspect ratio as the CD32 screen. This means you can position your text relatively accurately, so you can have great fun placing your own captions over films or music videos. To do this, your console will need to be equipped with an FMV (Full Motion Video) module.

If you are using the program to overlay video images with text, you will also find the genlocking effects useful. There are actually ten for you to choose from, ranging from simple wipes to dissolves and shutter effects. You can select the text's opacity as well. Once you have entered your text, decided upon its characteristics and how long it will be displayed, you can send the message by pressing the play button.

The CD page is the area of the program that is used to control the playing of both audio and MPEG CDs. The next page is the Files page. This provides an alternative to *Twin Express*. The major difference between the two is that the Files page is graphically based. The View page can be used to upload image files to the CD32 for viewing. To do this you select the file using a requester, specify how long you would like the image displayed for and then send it over to the CD32.

Before reviewing Communicator I thought it was just an expensive file-exchange setup. It's really an impressive product which not only gives you access to data stored on CD-ROM, it can also display PhotoCD pictures and provide control over the CD32's Full Motion Video capabilities. The Communicator would be an excellent tool for use at events such as exhibitions. The only reservation I have is that it is just a little too expensive – a price around £100 would be more reasonable. AS

WHAT
Communicator – £169.95
WHO
Eureka
WHERE
Meridian Software Distribution ☎ 081-543 3500

CHECKOUT
COMMUNICATOR

Ease of installation **85%**
Just plug in and go. Running the installation software is extremely straightforward.

Software **90%**
The suite of programs that have been supplied are innovative and easy to use.

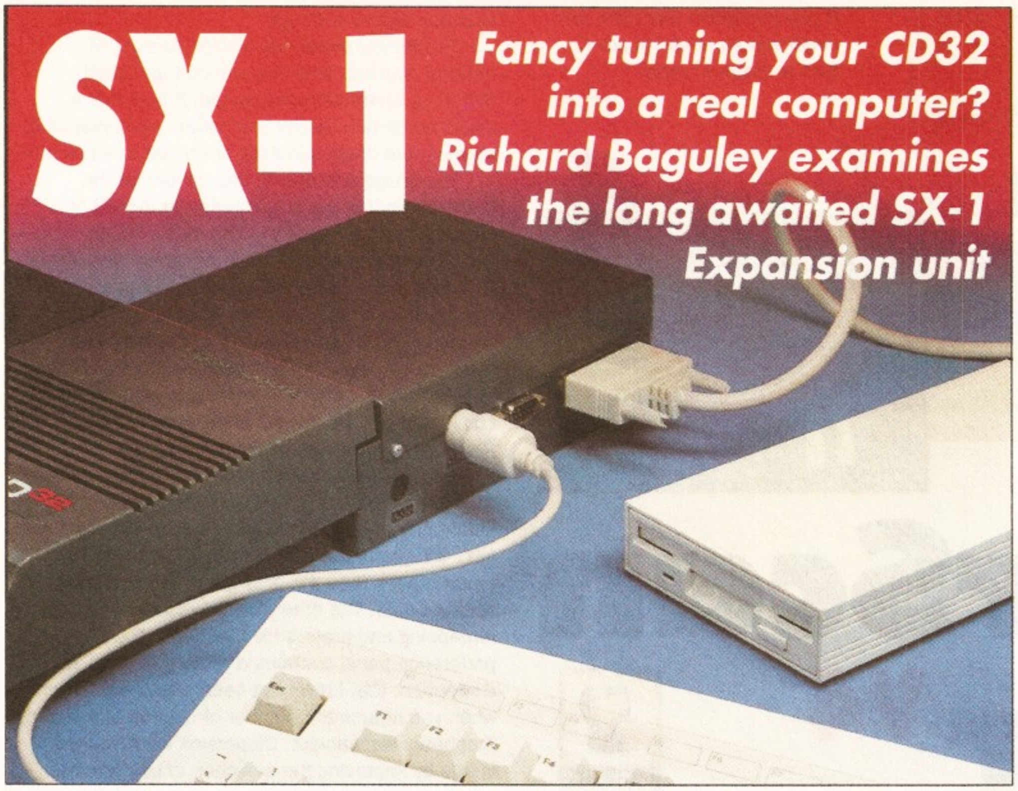
Features **88%**
There are more than enough features, for most people's needs, packed into this product .

Price **70%**
This is a good product, but a too high price is being asked for it.

Overall **86%**
This is a product that more than a few people may find useful – if they could afford it.

SX-1

Fancy turning your CD32 into a real computer? Richard Baguley examines the long awaited SX-1 Expansion unit



WHAT
CD32 Expansion unit – £199.99
WHO
Paravision
WHERE
Indi Direct ☎ 0543 419999)

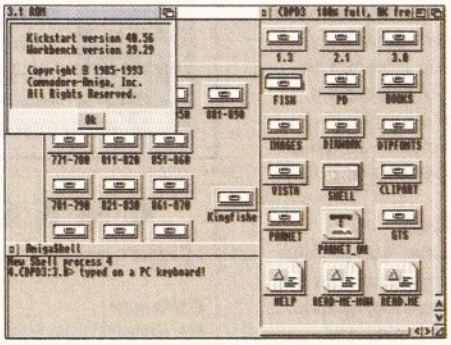
INTERFACING

The SX-1 adds the following ports to the CD32:
Serial – a 9 pin male socket (A 25 pin socket is fitted to the A1200).
Parallel – a 25 pin female socket.
RGB Video – a standard Amiga 23 pin male socket.
Floppy Drive – standard Amiga 23 way female Socket. Can be used with any standard Amiga drive (although power supply limitations mean that you shouldn't plug more than two drives).
IDE – two hard drives (one internal 2.5 inch model and one external) can be fitted to the SX-1 as required.
Keyboard – an IBM AT 101 key style keyboard can be fitted via the SX-1
Audio Input – combines another audio source with the CD Audio output.

There's no doubt the CD32 is a success, but a lot of people want more. Once you've played a few games, you want to get further into the fascinating world of computing. Only it's a bit difficult to get very far with only a CD32 controller to point the way ahead...

The SX-1 unit is designed to turn a CD32 into a "near A1200" (according to the PR handouts that accompanied it). This means adding a floppy and hard drive interface, a keyboard and the various other ports on the back of an A1200. For a full list of the ports the SX-1 offers, see the box headed "Interfacing".

Hardware wise, the SX-1 is not particularly inspiring, but it does fit in well with the CD32. The off grey box is colour matched to the CD32 and extends about seven and a half inches behind the CD32. It plugs into the expansion slot, and has an MPEG through port, allowing you to fit an FMV module. A nice bit of design allows you to still have the FMV unit inside the CD32, keeping everything looking nice and tidy. On the other three sides of the SX-1 are the interface ports, Using all of them gives rather a rat's nest of leads, and I also noticed that the RGB socket (on the left hand side of the unit) was a bit of a problem when the monitor required a sliver adaptor, as it got in the way of the CD32 power socket. Apart from that, I really can't fault the external look of the unit. A switch to disable the expansion ports (except for the RGB, keyboard and memory) is fitted to the back of the box.



A CD-ROM drive, a floppy drive, an IDE hard drive – what more could a boy wish for... or girl for that matter?

Inside the box, the SX-1 is composed of a single PCB. In the middle of this is a single SIMM socket, which can give up to 8Mb of extra Fast RAM. However, you should note that fitting an FMV unit will cut this down to 4Mb due to the fact that the FMV card grabs a chunk of memory space for its own use. A 2.5 inch IDE hard drive can also be attached to the bottom of this card. A set of six jumpers allow you to set the amount of memory fitted and to test the memory. Two of the jumpers allow you to slow down the boot-up process, which is extremely useful if you have a hard disk which does not spin up quickly. A real time clock (with lithium battery) is also fitted.

Although a keyboard can already be fitted to the CD32, Paravision have decided to add the option to use an AT 101 key style keyboard as well. This is an extremely good idea, as this style of keyboard is very cheap (typically around £30-40). The only problem comes with the Amiga keys, as these obviously aren't present on a PC keyboard. These are re-mapped on to the F11 and F12 keys, which are not present on a normal Amiga keyboard.

All of the expansion ports use the standard Amiga devices, so any program should be able to access the serial and parallel ports. I tested the serial port by downloading a file from a BBS using a V Fast Class modem, and the serial port had no problems handling a data speed of 28,800 bits per second. The parallel port was tested using the Liana networking system, and once again I did not come across any problems. The keyboard emulator is also completely hardware based, so it should work with any program, no matter how much it bashes the metal.

So what would it cost you to turn your CD32 into an A1200? The SX-1 itself costs £199, and a floppy disk drive will cost you around £40, and a keyboard will cost you around £50. Assuming that your CD32 cost you the usual sum (around £250), this gives a total of around £650. Contrast this with the typical cost of an A1200 (£330 for a desktop dynamite pack), and you can see that there is a pretty significant difference. To be perfectly fair, the SX-1 setup will be able to display FMV (which the Amiga 1200 with CD-ROM drive won't), but there are relatively few other benefits over an A1200.

This unit will certainly appeal to those who have a CD32 and don't want another machine cluttering up their table, but it's a pity that adding functions such as disk drive and keyboard are so expensive. Although it's not cheap, it certainly fits in flawlessly with the CD32 and makes it (more or less) into an A1200.

There is also a certain feel-good factor about being able to watch Video CD movies on your monitor, and this may also prove important for home movie makers, as the signal can be genlocked. The only omission is a PCMCIA slot, and that isn't much of a loss. I dare say that this piece of kit will find its way into many a CD32 owners' hearts, but I really can't see an A1200 owner defecting because of it. AS

CHECKOUT

Design 85%
It's a pity the sockets could not have been a bit better arranged, but it fits in with the CD32 very well.

Expandability 90%
Allows you to add peripherals such as a modem to a CD32 while still watching Video CDs.

Value 80%
It's certainly more expensive than buying an A1200, but it's not bad value considering what is built in.

Overall Rating 85%
It's not a cheap solution, but it does turn your CD32 into an A1200. What more could you want in life?



The PowerScan gives you high-quality images at an affordable price... impressive stuff!



If you recognise this man, you could win an amazing prize... *turn to page 97 now!*

PowerScan Colour V4

BEST BUY

Have Power Computing's new hand scanner met the challenge introduced by the AGA-Amiga? Graeme Sandiford finds out.

Power Computing's range of hand scanners has been popular for some time now. The introduction of the AGA-Amiga has meant that even more realistic images can be displayed using a standard Amiga. Obviously, this is good news for people who want to capture photographic-images for use with their Amiga. This meant that scanner manufacturers needed to improve both their hardware and their software to take advantage of the AGA-chipset. Several manufacturers have met that challenge, including Power Computing, but does their new colour scanner still come out on top?

To look at, the Power Colour Scanner, is quite attractive in a quiet sort of way. It's matt black and is curved quite nicely to fit into your hand. The curved design means that you don't have to apply too much down-ward pressure. If you do push down too hard while scanning, your hand and the scanner will tend to jerk along the surface to be scanned. This will result in a distorted image.

KNOBS AND BUTTONS

The scanner has several controls to determine which modes and what resolution will be used to scan the image. There is a four-way switch on the scanner's left side that controls the scanning mode. The positions are for the SCG, CG, MG and D/T modes. The SCG (Super Colour Graphics) mode can be used in resolutions of up to 200dpi (Dots Per Inch). This mode operates in 18-bit colour and therefore provides a maximum of 262,144 true colours. Of course, images of this quality cannot be displayed on a non-AGA Amiga. When using this mode, one thing you should expect is that you will have to move the scanner more slowly because more data is generated.

CG (Colour Graphics) mode can also be used up to a maximum resolution of 200dpi. This mode however, works in 12-bit mode and can only create images with a maximum of 4,096 colours – the same as the HAM mode.

If you intend to scan in greyscale, you would use the scanner's MG (Many Greys) mode. This mode is capable of scanning in higher resolution than the colour modes – up to 400dpi. This mode supports 64 greyscales, or levels of grey.

On the other side of the scanner is the contrast dial. It's used to control the contrast of the image that is produced by the scanner. The scanners resolution control is also situated on the scanner's right side. This has four settings: 1/4, 1/2, 3/4 and 1. These will provide a resolution which is their equivalent fraction of the current mode's maximum resolution. For example, if you are using SCG mode and the resolution switch is set to 1/4 the scanner will be operating at 50dpi.

THE DRIVING FORCE

The driving force behind the scanner, and perhaps its greatest advantage over its competitors, is the software. Aside from the usual scanning options, it also includes some very powerful editing and processing tools.

The Power Scan Professional software has a simple layout – there are several buttons along the bottom of the screen that open out to their own panels. The first button, from left to right, is the File panel. This is where you save the scanned images once you are happy with their appearance. You are given the choice of either loading or saving a complete scan or a clip. You also have a selection of four file formats to save your images in: IFF, IFF24, GIF and TIFF.

The Scan panel can be used to define the various scanner settings. You can set the width and height of the area you wish to scan and switch between the available modes, depending on the scanner head's settings.

The Printer panel has a large number of options. You can alter the smoothing, density, dithering, orientation and shade. It also has a colour-correction facility and aspect preservation to stop printed images looking stretched or squashed.

The image processing capabilities of the Process window are very impressive indeed. It features tools that you will find in top image processing programs. As well as straightforward functions such as flipping rotating and skewing images you can apply complicated filters. You can darken, lighten and smooth a whole image or a clip. You can also use the outline and relief filters. Outline is best used with mono images where it can hollow-out letters and other simple shapes. Relief gives an image an embossed look.

The edit panel performs in much the same way as a paint program. You have all the usual drawing, shape and brush tools. You can also enter text and alter the colours of the palette. You can scroll around the screen if it is larger than the current screen mode. The other panels include: zoom, remapping and preference functions. The preference panel contains a rather nifty tool, called dispersion, that I have not seen elsewhere. Often when you reduce the number of colours in a picture it appears washed-out. Dispersion improves the image by improving the selection of colours that are used in the image – impressive stuff! The manual is also very good. It does a great job of explaining some difficult concepts so that you can get the best results possible.

THE VERDICT

The Power Scanner has responded well to the improvements in the Amiga's graphics abilities. For my money it still manages to keep its nose ahead of the field, mainly due to the software; it produces the best quality images that I have seen from an Amiga hand-scanner. Although you will not get the quality you would from a flatbed-scanner, you still get some high quality scans. What's more, you get this quality at an affordable price. AS

WHAT
PowerScan 4 – £239
WHO
Power Computing
WHERE
Power Computing ☎ 0234 273000

CHECKOUT
PowerScan Colour V4

Software 92%
The software is the main contributing factor to this scanner's superiority.

Documentation 88%
The manual is well-designed, lucid and has plenty of images for you to consult.

Image quality 90%
As good as, if not better, than any other on the market.

Price 93%
Excellent value for money.

Overall 90%
The PowerScan is still the best hand-scanner for the Amiga.

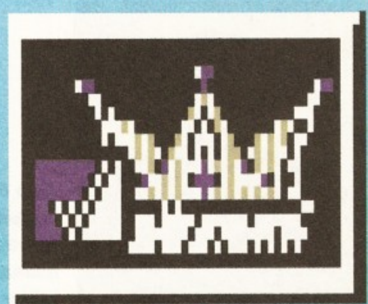
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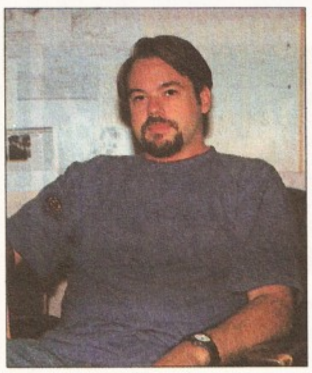
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Straight Talk

R Shamms Mortier interviews the folks at Amblin Imaging at Universal Studios in California – the most recognised Amiga computer animators on the scene today, and the people behind TV series such as Star Trek and SeaQuest DSV.



John Gross an extremely well respected animator and editor of "Lightwave Pro" magazine.

With the imminent release of a PAL version of NewTek's *LightWave* software as a stand-alone design and animation product in Europe, it seemed right to do an interview with the folks at Amblin Imaging at Universal Studios in California. This is one of the most exciting interviews I have done in this series in *Amiga Shopper*, as it allowed me to speak directly to some of the most recognised computer animators on the scene today. Besides the NBC show *SeaQuest DSV*, they are hard at work on the next *Star Trek* series (*Star Trek: Voyager*), due to premier this winter. The fact that they have used *Toaster/LightWave* technology on the Amiga so extensively within the exacting world of broadcast media over the past couple of years has greatly enhanced the perception of the Amiga as a world class animation and 3D design platform, as well as pointing out the high-end professional applications possible.

The answers provided by Amblin flowed through the person of John Gross, one of Amblin's most able spokespersons. If you have hopes of becoming a professional computer animator, you should pay very special attention to this interview. It will give you a look at what talents may be required on your end, as well as to give you a peek into what the tasks are really like.

When was Amblin organised, and what is its institutional history?

Amblin Imaging was created in late 1992 as the CGI (Computer Graphic Imaging) facility for NBC's *SeaQuest DSV*. At the time, that was the only work to which the facility was dedicated. Soon after the pilot was finished, Amblin realised the value of a facility that employed desktop computers running high end software (NewTek's *LightWave 3D* in the Video Toaster as well as Parallax's *Matador* and *Alias* on the SGI) to produce low cost, high quality visual effects and quickly broke us off as a separate entity. Only recently has Amblin Imaging been seeking outside work. Some of our first projects included two Super Bowl commercials: (McDonald's and Alamo Rent-a-Car), an episode of *Star Trek: The Next Generation*, and currently, effects for USA Network's *Weird Science*, and NBC's *SeaQuest DSV*. Currently, Amblin Imaging is located on the Universal Studios lot a short distance from Amblin Entertainment. There are 17 people employed by Amblin Imaging – 11 animators and six administrative and technical people.

Where and how did Amblin's name originate?

Amblin Imaging's name came from Steven Spielberg. When the facility was first started, Steven immediately began calling us Amblin Imaging, even though we were dedicated solely to *SeaQuest's* effects and weren't "officially" broken off as a separate facility until early 94.



Somewhare under this lot is the Personal Animation Recoder Amblin use for their tests.

How and from where did Amblin amass its talent, and where did your animators learn to do what they do?

Most of the animators here are self taught *LightWave* animators like John Gross and Tony Stutterheim. A few of the animators were brought on because of their experience with other platforms. Bruce Hall, for instance was mainly a PhotoShop user who was brought on for his texturing abilities and has picked up *LightWave* very quickly. Eric Barba was brought on for his Alias experience and Greg Teegarden began his computer career as a *3D Studio* user. Other animators were brought in because of their artistic ability on other platforms. All of these people have been "converted" over to using *LightWave* however.

> **"We wouldn't be here without the Toaster and LightWave."**

Can you give us a brief bio on some of Amblin's key personnel?

Tony Stutterheim – was a news photographer for Topeka's Channel 13 and did a story on NewTek and became interested in the Toaster and was offered a job by NewTek as a result. He quit NewTek to work on *SeaQuest* in late 92.

John F.K. Parenteau – was a cinematographer whose friend had a Toaster. John became interested in setting up scenes in *LightWave* where he could express his cinematographic expressions without having to set up real equipment. He was hired by Amblin Imaging in early 93.

John Gross – was a swimming pool company purchasing agent and decided to get into computer graphics. He got interested in the Toaster after seeing Allen Hastings' demo *LightWave* at the Chicago AmiExpo in 1989. Soon after he became an intern at Alpha Video in Minneapolis and soon became the *LightWave* expert and became recognised by NewTek and became a beta tester for *LightWave*. He was hired by Amblin Imaging in late 92.

Eric Barba – Eric was brought in in late 92 as an Alias animator for Amblin Imaging and quickly was introduced to the Toaster and *LightWave*.

Greg Teegarden – Greg, a set designer for *Jurassic Park*, was brought in in late 92 as a 3D Set animator. He quickly became attached to *LightWave* and has been using it since.

Grant Boucher – Grant worked for a former Amiga Dealer and was introduced to the Toaster when it was released. It was his job to learn *LightWave* in order to demo it. Soon after, Grant went freelance and performed work for Fox and Nickelodeon studios in Florida. He was hired by Amblin Imaging in late 93.

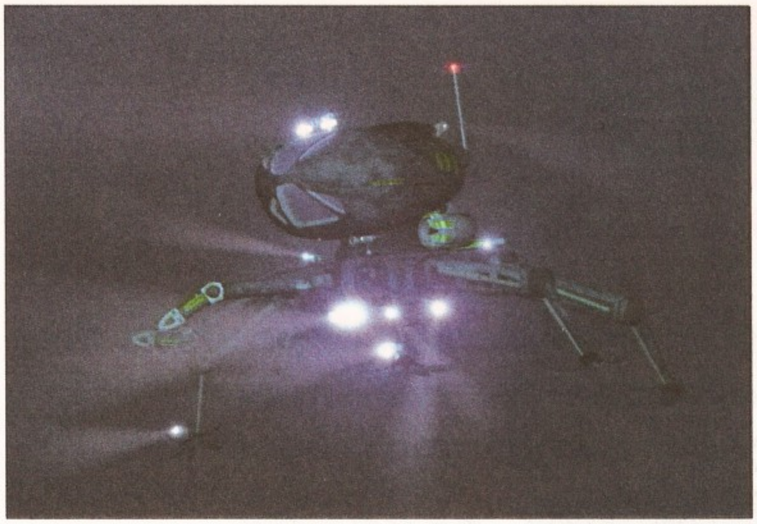
Bruce Hall – Bruce, a graduate of Art Center College of Design with honours in Illustration, has a traditional art background. He has worked in such fields as advertising and video game design. He was proficient in *PhotoShop* and he caught on to *LightWave* extremely fast. He was hired in 1993.

Ron Herbst – Ron was hired in early 93 as the video playback supervisor for *SeaQuest*. His background in *DPaint* allows the playback department to create impressive screen displays and playback graphics.

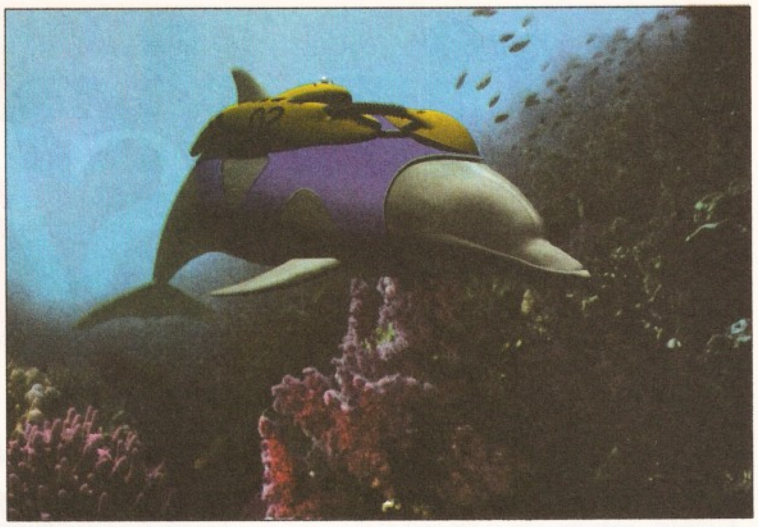
Fred Tepper – Fred was hired in early 93 to assist Ron in the playback department. His background in *LightWave* coupled with his *DPaint* skills allows the two of them to create an amazing amount of playback graphics on a weekly basis.

Taylor Kurosaki – Taylor was the original employee of Amblin Imaging hired in late 92. His interest in the Toaster secured him a job as the digital systems coordinator. He was responsible for procuring the equipment for, and setting up the facility. In early 94, he decided to shift his skills to the animation side where he is currently creating effects for *SeaQuest*.

Peter Nye – Peter was brought on in mid 94 as an intern/apprentice. He has quickly picked up *LightWave* and is currently helping to create effects



This render of one of the SeaQuests crab vehicles clearly shows the power of Lightwave at creating realistic objects, including the underwater gloom.



Combining live action video and ray traced images is a very difficult process, but Amblin have obviously cracked it, judging by this image from SeaQuest.

for *SeaQuest*.

Just how important is LightWave software in what you do?

The Toaster and *LightWave* are extremely important in our work. We wouldn't be here if we could not use them as the show *SeaQuest* would have been unable to air without low cost, high quality graphics. Early *LightWave* test actually helped sell the network on the *SeaQuest* project.

Can you give us some idea of what systems Amblin use in the computer animation work you do?

We currently have approximately 60 Toasters all networked together using Oxxi's Novell Software. We have two DOS servers with a 50 gigabyte disk array for storage. Every animator has 2 Toasters at his desk plus there is a 40 machine render farm that is rendering images 24 hours a day. Each Toaster system has an 040 accelerator and 32Mb of RAM. We have two Raptor II's and the first Screamer beta system. We also have three SGI systems and an assortment of Macintosh Quadras and PCs.

What other Amiga specific products do you use heavily at Amblin?

Other Amiga specific products include: *Directory Opus*, *ADPro*, *ImageFX*, *WaveMaker* (for storyboards), *Cygnus Ed*, *DPaint*, *Personal SFC* and two PAR systems. The PARS are used for viewing daily animation tests (approximately 10–15 a day).

Of these, what are your favourites?

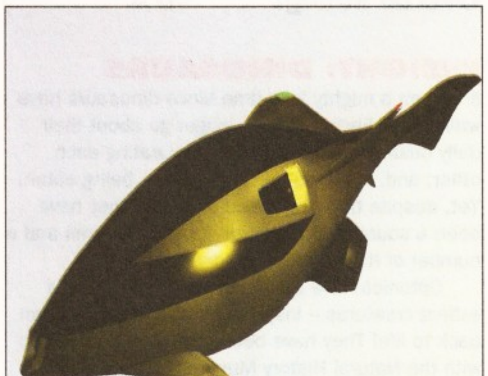
Our favourite utilities include *Directory Opus* and the PARs.

Who were your main influences and mentors as animators, people who you look upon even today as true pace setters in the field?

Pretty much all of us were greatly influenced by George Lucas' *Star Wars* trilogy. Many of us saw them too many times to count. Other influences include Orson Wells, Alfred Hitchcock, James Cameron, The Coen brothers, Dennis Muren and (of course) Steven Spielberg.

What were three of your most difficult challenges thus far, as far as unique computer animation needs brought about by requirements in a script?

1. While composing live video shots with *LightWave* isn't in itself difficult, trying to match shots that have been shot by hand or shots that are not "locked down" can be very daunting. The way these were solved were by lots of patience, hard work and many attempts to get things to look right.
2. Lens Flares – to get the realistic look to underwater flares, we had to come up with a "double flare" technique where each flare is coupled with another flare which has a high intensity but with a large dissolve which helps create the "particle glow" around underwater lights.
3. Building the *SeaQuest* – when this was started, Modeler didn't quite have the splinecontrols that it has now. Because of the design of the ship, the *SeaQuest* was an impossible task to build with polygons. Luckily Stuart added spline based modelling and that allowed us to model this difficult object. Many of the features that are currently in the latest versions of *LightWave* and Modeler were added due to problems or needs that we had in designing specific shots and looks.



This fearsome looking craft (called the Stingray) is from a forthcoming episode of SeaQuest.

Where is Computer Graphic Imaging going?

In the future, CGI will have a much larger use in this industry. I can see that eventually, there will be CGI sets, backdrops and actors. We just need faster rendering capabilities approaching real time in order to do things like this practically.

What is the biggest concern?

Obviously, speed is a major issue. Not so much the speed of rendering as we can always throw more machines at that, but the speed of the interface is our major concern at the moment. We would love to see *LightWave* running on an SGI with a large screen interface and fast screen updates.

What is the range of work Amblin is involved in?

We are currently doing effects for *SeaQuest*, *Weird Science* and commercial productions. The work differs from each other as *SeaQuest* is more realistic than the *Weird Science* work we do. Most of the *Weird Science* work is computer displays and virtual reality type of effects. Commercial productions can vary greatly depending upon what is requested.

What's coming up in the future for Amblin?

In the planning stages are work on feature films, the new *Dr. Who* pilot (Fox network) and episodes of *Star Trek: Voyager*.

Do you have a favourite computerised image morphing package?

We generally stay away from morphing, but when we do we use *ElasticReality* by ASDG (on the SGI platform).

What is an "average" animator's day like at Amblin, if there is such a thing?

Most animators get to work around 9 in the morning and work until 6pm. When we get a new script, the script is broken down into individual shots and each shot is placed on to a "shot card" that gets assigned to an individual animator. The scenes are put together and any models that are needed are assigned to be built. One animator may take a shot from beginning to end, or it may be passed among a couple of animators to be finished.

Every night, the animator will turn in his shot card and it will be rendered over night and layed off to a PAR for reviewing the next day. The next morning, all animators will meet in the dailies room and watch all of the tests that were rendered that night. During this time, suggestions and comments are made and the animator will do another test. This happens as many times as it takes to get the shot perfect and then it is put in for final rendering where the resolution is bumped up and all the rendering options are turned on.

What thoughts would you like to leave us with?

As said before, I predict that we will be getting very close to real time feedback and visualisation. This can only help to get CGI more and more involved in the film and video industry. AS

Window Shopper

Here is another fine selection of products that we didn't have room for elsewhere, reviewed by our own Graeme Sandiford.

Welcome to another edition of Window Shopper. This is the part of the magazine where squeeze as many small reviews as we can. Most of the products on review are either too small to merit a whole page or are of minority interest.

This month Gary Whiteley, our resident Graphics and Video expert, lends a hand with reviews of *Essence 3* and *X-Mix 2 – The Video*.

ESSENCE – VERSION 3

The name *Essence 3* suggests that this is a brand new version of Apex Software Publishing's excellent procedural textures for use with Imagine, and now *Forge*. However, that's not exactly the case, for *Essence 3* is actually a generic term which refers to upgrades to both sets of *Essence* textures – Volume I and Volume II.

The reason for the upgrading of both sets of textures is to improve their performance, make them directly compatible with both the *Forge* software and '040 processors, fix a few minor bugs and significantly improve their rendering speeds. An important new feature, Alpha Channel, has also been added, along with a few utility textures to facilitate working with the Alpha Channel. More attribute files have been added and JPEG images of all the textures are now included to help make life easier for the user.

To explain, Alpha Channels use greyscale data to make portions of a texture transparent so that other textures can be seen through the transparent parts. A good example would be the use of a black and white check texture to provide the two keys (one for black, one for white) and then when two new textures are added, and told to use the Alpha Channel settings, the original black and white checks will be replaced by each of the new textures – for instance the black checks could become dark marble and the white ones wood.

If you have any 3D software capable of image mapping (not just *Imagine*) and want control over your textures, get *Forge* and a set of *Essence* disks. You won't regret it, and you'll probably wonder how you ever did without 'em! Registered owners of *Essence* II should already have received their free upgrades, but *Essence* I owners will have to buy the textures once again to reap the benefits. Don't forget that *Forge* (Apex's *Essence* texture manipulator and renderer) is provided free with these sets if you buy them now.

Essence requires an accelerated Amiga (020/030/040) with an FPU, at least 3Mb RAM, around 1Mb of free hard disk space and *Imagine* or *Forge* (or both).

Product: Essence I and II, version 3



These are but a few of the wild and wacky textures that can be generated with the help of Essence version 3.

Price: £99.95 (each)
Supplier: Meridian Software Distribution
Tel: 081 543-3500

Overall Rating: 96%

INSIGHT: DINOSAURS

It's been a mighty long time since dinosaurs have walked the Earth. They no longer go about their daily business: eating vegetation; eating each other; and, for the unfortunate ones, being eaten. Yet, despite their fossilised condition they have been a source of inspiration for several films and a number of money-spinning ideas.

Optonica have also been inspired by these extinct creatures – inspired, that is, to bring them back to life! They have been working hand-in-hand with the Natural History Museum in London to produce a CD-ROM based dino-extravaganza. (Groan – Ed). This educational multimedia package aims to give Amiga-users access to 670Mb of information about dinosaurs. *Insight: Dinosaurs* utilises photographs, animations, voice-overs, text and motion video clips to acquaint users with 36 well-known dinosaurs. It also provides information about how the Earth back then differs from our own.

Insight: Dinosaurs can be used by anyone who has a CDTV, CD32 or A570. The program will automatically detect which hardware setup you have and will select the data it will use accordingly. For example if you have a CDTV the video clips will only be shown at 25 per cent of the screen's size, while CD32-owners will be treated to 80 per cent display. The CD32 still images are also enhanced and take full advantage of the AGA-chipset.

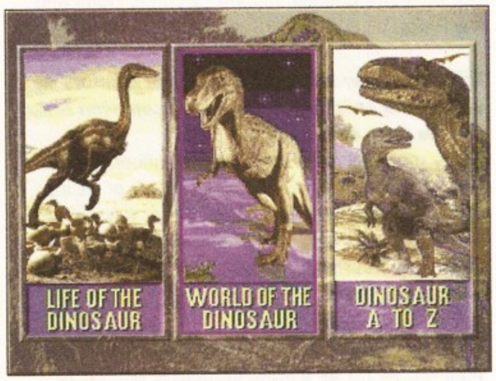
The disc is aimed at the whole family and contains information and activities to keep both the young and old entertained.

As with most multimedia titles, you navigate your way through the information by means of a series of menus. The main menu of *Insight: Dinosaurs* gives a taste of the quality of the of images that are used throughout the program – extremely good. From the main menu you can enter several areas – these include: Funosaurus, Browse, Index, Glossary and the Dinosaurs main area. You can also gain access to the programs help facility.

The Dinosaurs main area will give you three routes of exploration, the Life of the Dinosaur, the World of the Dinosaur and the Dinosaur A to Z. The life of the Dinosaur provides information about their anatomy, diet and digestion, movement and behaviour, attack and defence, as well as the descendants of the dinosaur era. The World of the Dinosaurs does an excellent job of describing the environment that the dinosaurs lived in and the changes in the environment that may have led to their demise. The A to Z section lists several of the best known dinosaurs. To access information about one, you simply click on its name and you are taken to text entries and images relating to it.

The Funosaurus section is aimed at children and contains several games. Dino Paint is a collection of outline pictures of dinosaurs – the outlines can be filled in with the colours of your choice. Dino Quiz tests your knowledge of all things dinosaur-related, and believe me when I say some of the questions are pretty tough (although you can bluff your way through some of them if you know a little Latin). Dino Saw is one those sliding puzzle games.

The Index and Glossary work in the same way as the Dinosaur A to Z – you choose a topic or name from a list and the corresponding information



Despite the fossilised condition of the dinosaurs, there are still an inspiration for films and excellent Multimedia programs such as Insight:Dinosaurs.

and images pop up.

This is my first look at the insight series and I must say I am thoroughly impressed, and can't wait get my hands on the other two (*Technology* and *Living Body*). Matching the quality of the presentation, the animations and the sheer depth of the knowledge contained in this product is a admirable goal for any multimedia developer.

Product: **Insight: Dinosaurs**
Price: **£39.95**
Supplier: **Optonica**
Tel: **0455 558282**

Overall Rating: 90%

MAXON MAGIC

HiSoft

You may have some difficulty in believing this, but some people actually think that computers are boring. Well, this next program from HiSoft might just change a few opinions. The program proudly claims to be "the loudest, most colourful, yet most useful program of all time", it's certainly loud and definitely colourful, but whether it's useful is open to debate.

Maxon Magic is an interesting mixture of products – it is both a screen-saver and a system sample manager. Screen-savers are nothing new – there have been plenty of PD ones floating around for some time. While they do help to prevent phosphor burn damage to your monitor or TV, everybody knows that they are more of an amusement than a safeguard. The system sample managing abilities are more of a novelty. Although, with Workbench 2 and 3, you have always been able to change the standard alert beep to a short sample of your choosing. *Maxon Magic* can be used to assign samples to events, times and key-presses.

Installing *Maxon Magic* is simplicity itself – you just run the installation script and follow the on-screen prompts deciding which modules and features you wish to install as you go. You can also choose whether you want *Maxon Magic* to run at boot up.



Is Maxon Magic really the most colourful, loudest yet useful program ever? Why not read the review and find out.

Once you have installed the program you can access its control window by pressing shift-F1. The control window is the place where you select which screen-saving module you wish to use and where you assign samples to system events.

There are quite a few screen-saving modules to choose from – 18 are supplied with the program. However, none of them are particularly outstanding, and most of them have PD equivalents that are just as good.

One of the most well-known screen-savers, on most computer platforms, is the Aquarium module. The version included has the swimming fish etc. but adds a little twist – a fish hook is dropped into the tank and one unfortunate fish is dragged out of the tank. Other well-known modules include: fireworks, eyes, lightning and Wb joke which cuts your desktop into several pieces and then slides them about. A module that has a more practical use is the Password protection module – once this module has been activated, it will refuse to return to Workbench or the program that was being used before it was activated until the correct password has been entered. You are also given limited control over how the modules behave.

The system sample manager sounded like a great deal of fun. But, most of the samples turned out to be quite unimaginative. However, there were one or two I liked, such as the one that says "I want it all" and the whipping sound (maybe I'm a secret megalomaniac with sadistic tendencies). (Surely not! Oh Master, please stop whipping me – Ed). The Samples can be assigned to a number of events such as a window being opened, a key being pressed, a text entry or even the launching of a particular program.

Despite the program's flexibility in the sound depart, it is still rather disappointing and more than a little expensive. While I would have no objection to paying £30 for a *Star Trek* or *Star Wars* screen-saver, I think this is too high a price for a product that is almost matched by PD programs. However, this product has given me an interesting insight into the more violent side of my colleagues' personalities.

Product: **Insight: Maxon Magic**
Price: **£29.95**
Supplier: **HighSoft**
Tel: **0525 718181**

Overall Rating: 72%

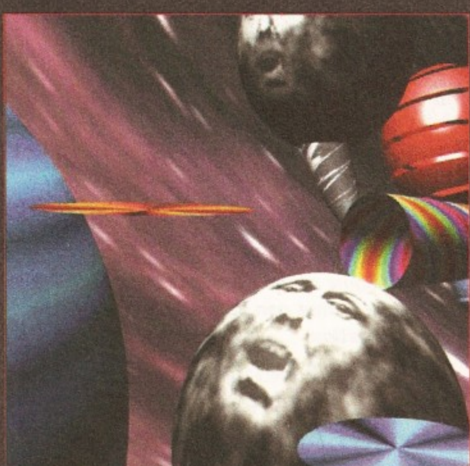
2 MANY FONTS

Using high-quality colour fonts and backgrounds is an excellent way to give your video presentations a professional appearance. However, creating your own colour fonts can be an extremely time-consuming endeavour, even when using excellent software like Cloanto's *Personal Fonts Maker*. Drawing each individual character takes a great deal of perserverance and no small amount of artistic ability.

This is why a product such as *2 Many Fonts* can save you a great deal of hard work and increase your video-titling productivity. *2 Many Fonts* is a collection that comprises 10 distinctive

X-MIX 2 – THE VIDEO

This is just one of the stunning animations that have been included on the X-Mix 2 video – they are even better in motion.



If you're into Amigas, animation and that ravey-type Euro-style beat music, then we'd like to draw your attention to a new video, organised and compiled from Berlin, but featuring the work of animators from all over Europe.

X-MIX 2 is its name, enjoyment is its aim. What more can I say? Oh, OK then, here's some more information... With 15 tracks, all from bands you have probably never heard of, each with its own animation, *X-MIX 2* still manages to run together into one seamless 60 minute video, thanks to producer Laurent Garnier. Each individual section is cleverly segued together and it can be quite hard to tell just where one cut stops and the next one starts. Which is why I can't be sure exactly who to credit for what – so I won't even attempt to!

The animation styles are mainly 3D-oriented, and some are obviously produced on better equipment than others, but it's not always technical quality that counts. Good animation shines through, even if it's on scratchy old black and white film, and there's some good animation on this tape. Admittedly, I can't quite get my head round why each particular music track has been interpreted by the animators in the way that it has, but it's not my place to judge art and music. I like lots of things, and I like this tape.

If you want to catch some of the best "underground" music animation around, then here's where to go. And just to sweeten the pill, as well as offerings from amongst others, Tobias Richter, Eye Visual work and Big Box Powders, there's a piece from that well-known (in Leicester at least) urban legend Henri "Mad Dog" Bujko, of Alternative Image, and it's almost worth getting the tape just to see what Henri can do with *Real 3D*.

X-MIX 2 is not just interesting video wallpaper – it's a timeslice of what's happening in one area of the European music and animation scene. *X-MIX 2* is not cramped in its outlook, and if you like these kinds of compendiums and fancy something to really make you wonder "How Do They Do That" then check this tape out. PLAY LOUD!

Product: **X-MIX 2 video.**
Price: **£13**
Supplier: **Alternative Image**
Tel: **0533 440041.**

Overall Rating: 83%

DYNAMIC MOTION MODULE (FOR LIGHTWAVE)

The universe is a funny old place. First of all, it's inconceivably big, but not only that – it is highly organised. Everything, matter and energy, conform to the laws of the universe. These laws include such things as gravity and the speed of light. These laws are what keep the universe a stable and safe place to live – well, most of the time.

While this is the case in the real world, computers can at times show an alarming disregard for the natural laws of the physical universe. This can be quite evident even in 3D animation programs, where you will regularly see objects of many descriptions regularly defy gravity and even pass through each other.

This can be a real pain when you are trying to create realistic animations. Given the complexity of these laws, it's surprising how even small mistakes can appear glaringly obvious when you are trying to make an accurate animation.

To help those who would like to simulate the real world as accurately as possible, Positron Publishing have released their *Dynamic Motion Module for LightWave.* This cunning piece of software is able to load the key-framed scenes created by *LightWave*, add dynamic characteristics to objects, calculate their movement and interaction, and then create a new scene file which can be rendered in *LightWave.*

The principles behind the *Dynamic Motion Module* are quite simple; each object in a scene is given a set of dynamic characteristics. These characteristics include the object's mass, elasticity, drag and whether the object should be affected by gravity. As well as these characteristics, the object can also be assigned a set of initial conditions, such as its acceleration, velocity and angular velocity.

An object's mass not only affects its own behaviour, it also determines how it will interact with other objects in the scene. For example, if you are creating a project that will simulate a break in the game of pool, while you will want all the balls to have the same mass value, you might want a higher value for the pool table to ensure it doesn't move when struck by a ball.

The objects elasticity will determine how it will bounce. The scale of elasticity is from 0 to 1; a value of 0 will give a similar bounce to that of a book, and a value of 0.75 is close to that of a basketball.

The drag value represents how much resistance is offered to an objects velocity. The higher the value that is entered, the quicker the object comes to a stop.

An object can also be freed from the force of gravity. This is useful for stopping objects that you wish remained stationary in view.

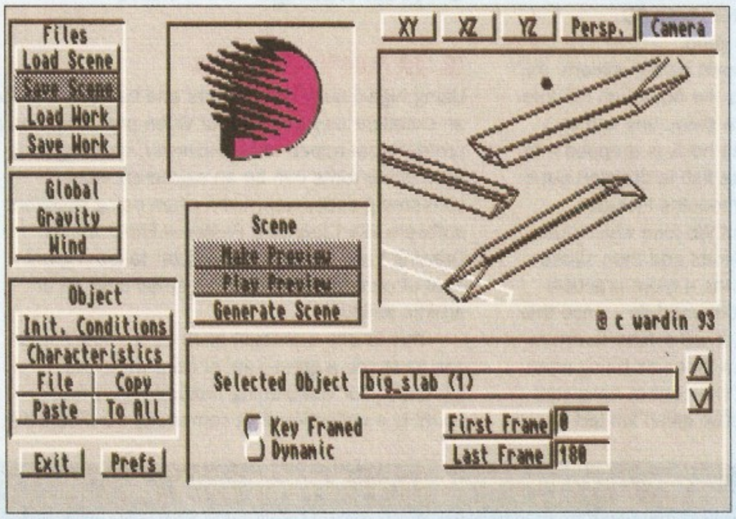
The objects initial conditions determine its initial behaviour. You are given control over how fast the object is moving (its velocity), how quickly its speed will change (its acceleration), and the direction it is travelling in (its angular velocity).

Of course there is one more element necessary to complete the simulation of how real objects behave. This is the way the objects interact, and the tool that is used to aid this simulation is collision detection. This is how the program knows that two or more objects have made contact with each other. Once it is aware of this, it can then begin calculating the new behaviour of the objects.

The *Dynamic Motion Module*'s detection relies on point of polygon contact. In other words, a point of an object touching another object's polygon will constitute a collision. This method does require some considerations when you are modelling objects. You have to make sure that all the objects are made from single-sided polygons and to help improve collision detections, you may have to use more polygons when constructing an object than usual.

If all of this sounds impressive, that is because it is – it is a very complicated process. However, this complexity does have a cost in computational time. Even on the office's A4000 040 the program can be tediously slow, I can only begin to wonder how slowly the 68000 version must perform.

But, the main problem with the program is not its lack of speed, but rather the number of bugs the program contains. Although the program performs flawlessly most of the time, objects sometimes behave in a manner that can only be described as bizarre. This is a real shame as the program is very promising and could potentially be an indispensable animation tool for *LightWave*-users. Hopefully these bugs will be sorted out in the next version of the program.



The Dynamic Motion Module for LightWave use the physical laws of the universe to calculate how objects should behave to emulate the real world.

Product: Dynamic Motion
Price: $179.95
Supplier: Positron Publishing
Tel: 0101 402 493-6280

Overall Rating: 71%

fonts, 205 tileable fill patterns, as well as a disc of palettes.

These fonts can be used with any paint package that supports 8-colour fonts and can load brushes as fill patterns, such as *DPaint*, *Brilliance* and *Personal Paint.* The fonts themselves are actually plain white and are anti-aliased. This means you can fill them with any patterns that have been included or, if you prefer, one of your own.

To make use of the fonts you need to copy them to your fonts directory or use the assign scripts supplied on the disks to assign that disk as the Fonts: directory. Once you have done that, you can load the font of your choice and then start typing. Unlike some PD collections, there is no need to cut and paste letters – they can be used like any other font. Once you have typed your titles, you can then fill the letters in with the pattern of your choice.

What about the quality of the fonts? Well the overall quality is quite good and there is a good variety. The ten fonts and sizes are: Astronaut (51 & 68 point), Baker (65 & 78), Blocks (67 & 82), Chandra (72 & 88), Flint (70 &88), Industrial (70 & 88), Muscle (61 & 72), Newscast (74 & 88), Sci-Fi (70 & 88), Viera (63 & 80). This selection is wide enough to cover most video-titling subjects.

The fill patterns are also quite varied, however their quality, in most cases, does not match that of the fonts. Although there are some very good fills, there are also some pretty poor ones. This is a shame, but not too much of a crisis, as there are some which would be very useful as well, but you need to be prepared to do some searching. To help you with this search you can use the pictures provided on the utility disk.

The manual supplied with the collection is quite small, but despite its diminutive size it is actually very good. Not only does it explain how to use the fonts with *DPaint* and *Brilliance*, it provides some useful guidelines and some general tips for successful video titling. You can also receive help with the product by calling the company's help line.

This is a useful collection; it is also extremely versatile. It is definitely worth considering if you really don't have enough time to make your own fonts and fills, and if you want to give your multimedia presentations a professional feel.



Here are some of the excellent fonts and backgrounds that can be found in the 2 Many Fonts collection.

Product: 2 Many Fonts
Price: £59.95
Supplier: Meridian Software
Tel: 0533 863501
Overall Rating: 86%

Know what I mean?

Metal Bashing by Charlie of Digital Image Design

Hardware Bashing (accessing the Amiga's hardware directly), if done correctly, will always produce the most efficient code, in much the same way that hand-optimised assembler will always be much better than its compiler generated equivalent. Certainly there's a future with five pipelines, super-scalar, AAA*n-1 chipsets but for the time being we have the A1200/CD32 and A4000 with either an 020, 030 or 040 processor, and an AGA chipset – so it makes sense to write code that uses current hardware to its best advantage.

The only way to elegantly use the features provided by the hardware designers is to program at hardware level. This has the twin advantages of:

(a) the executing program does not have to wade through a quagmire of multiple layers of OS, and;

(b) the programmer is not constrained by what the OS permits.

But what about future developments, I hear you cry? If or when the AAA appears, you can bet your hat that I'll rewrite to take advantage of that too. Sure, the OS routine might take advantage of it, but without a rewrite, however, it'll be darn slow and use more memory.

How many bitmap rotating, fast 3D vector, plasma drawing programs using OS routines have you ever seen ? You might say they don't work on newer hardware, but this is down to bad programming styles. In an ideal world everything would work all of the time, but it doesn't – even the OS gets it wrong. It's perfectly easy to write routines for the 1.3 ROM which won't work on 2.xx or 3.xx ROMs.

Everyone wants Doom on the Amiga. Some think it can be done, some think not, but one thing's for sure – it'll have to use every trick in the Metal Bashing book to get it going.

Personally, I find it quite ludicrous that a machine with hardware dedicated to screen scrolling does not have any routine in the OS that performs this function effectively. Sure, there is the ScrollVPort routine, but this carries out so many long and convoluted operations that it takes the best part of a frame to do its thing, leaving you very little time to actually write stuff into the screen memory. To perform this using the hardware directly is simple, quick, compact and much more efficient.

Grab the things you require, like the Blitter and audio, allocate your resources – don't just take them. Doing this will ensure that the Amiga user stays happy with his new Axx00/0x0.

As for Digital Image Design, we write games for, amongst others, the A1200/CD32 and A4000 machines. We test them on 020/030 and 040, and whatever else is available to us. We use VGA/Multisync monitors and variants of Fast RAM, and also the FPU if available. I'm sure the late Jay Miner would be pleased to see his chipset being used to its best advantage.

Long live the Custom Chip and the Custom Chip Hacker!

Charlie is a programmer with Digital Image Design, who are responsible for games such as *F29 Retaliator* and the forthcoming *TFX* and *Inferno*.

> "Hardware Bashing, if done correctly, will always produce the most efficient code, in much the same way that hand-optimised assembler will always be much better than its compiler equivalent."

The wonder of games by Jim Hawkins

Jim Hawkins is a professional writer and occasional Amiga programmer. He has been involved in many Amiga projects, including the *Asterix* series on CDTV. He is also an accomplished jazz pianist.

> "The games industry has become a total me-too industry – the slightest hint of novelty in one game is cloned as fast as the assembler can spit it out. I find this very sad."

Despite the wonders of computer technology and shelves full of games in the stores all over the world, people get together to play board games. You would have thought that by now the cardboard counters would have been junked. Not so, because games programmers seem to have become obsessed with a tiny genre of games – shoot, jump and puzzle. It's become a total "me-too" industry – the slightest hint of novelty in one game is cloned as fast as the assembler can spit it out.

I find this very sad. Lots of kids are having the word "game" redefined for them. There's far more variety to a game than chasing a blob across a television. There have, however, been exceptions: *Lemmings* was a new idea that took the market by storm, and it's inspired a new genre. *Populous* also made an original contribution, and so did the totally compulsive *Settlers*.

Generally, though, huge amounts of talent and effort are going into yet another platform game and "just a bit faster" flight sims (with shooting, of course). Some of the reasons for this is an obsession with technology rather than an obsession with game play.

It's very tempting for programmers to confuse the number of polygons they can draw in a millisecond with a real gaming experience – in a sense the game has become a way to see who can go faster. Programmers talk far more about frame-rates and 3D rendering than they do about balance, tempo, strategy and other key issues in a properly designed game. That's partly because programming is a kind of game of challenge; why else would so many people spend so much time learning to program their Amiga?

It's a deep puzzle (so deep it defeats most of us most of the time), and a contest played against a mysterious hoard of enemy "bugs". This programming game is never over. Nobody can be quite sure that all the bugs are dead – watch the faces of programmers at a product launch and you'll see fear and paranoia. It's a game played for high financial stakes – electronic poker, if you like. It's no wonder that this can take over from the less threatening thing – the game itself.

Some of the more "heavy-weight" computer games of recent years, like *Civilisation*, are conversions of board games that have been extensively play-tested by keen and expert players to get the "feel" and balance right. Often they've been analysed very carefully. Getting a game right is not a five minute job – but in the race to the next CES too often we see games with beautiful graphics revealing a lack-lustre event at the core.

So I'd like to suggest that all of us could refresh our ideas of what gaming is by getting some mates round, switching off the monitor, and shoving some cardboard-pieces about on a board. And I'd definitely like games producers to do this once a week... at least.

A final plea: can we *please* have more games that allow two computers to be linked together for two player mode? *Settlers*, just for one, screams out for it.

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Sittingbourne Co-op Computer Club, Contact Andy (0795) 842608, The Bungalow, Keycol Hill, Newington, Sittingbourne, Kent, ME9 8NA.

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TURN TO THE MARKET PLACE FOR EVEN MORE BARGAINS

Don't forget to turn to *Amiga Shopper's* 'Market Place' section (page 42–43) for a slice of the very best buys in the business today.

The 'Market Place' is the section of the magazine where some of the best Amiga dealers and PD houses in the country advertise their products and services.

If you are looking for a particular piece of hardware or software, you would be well advised to take a good look at what these companies have to offer.

Don't miss it!

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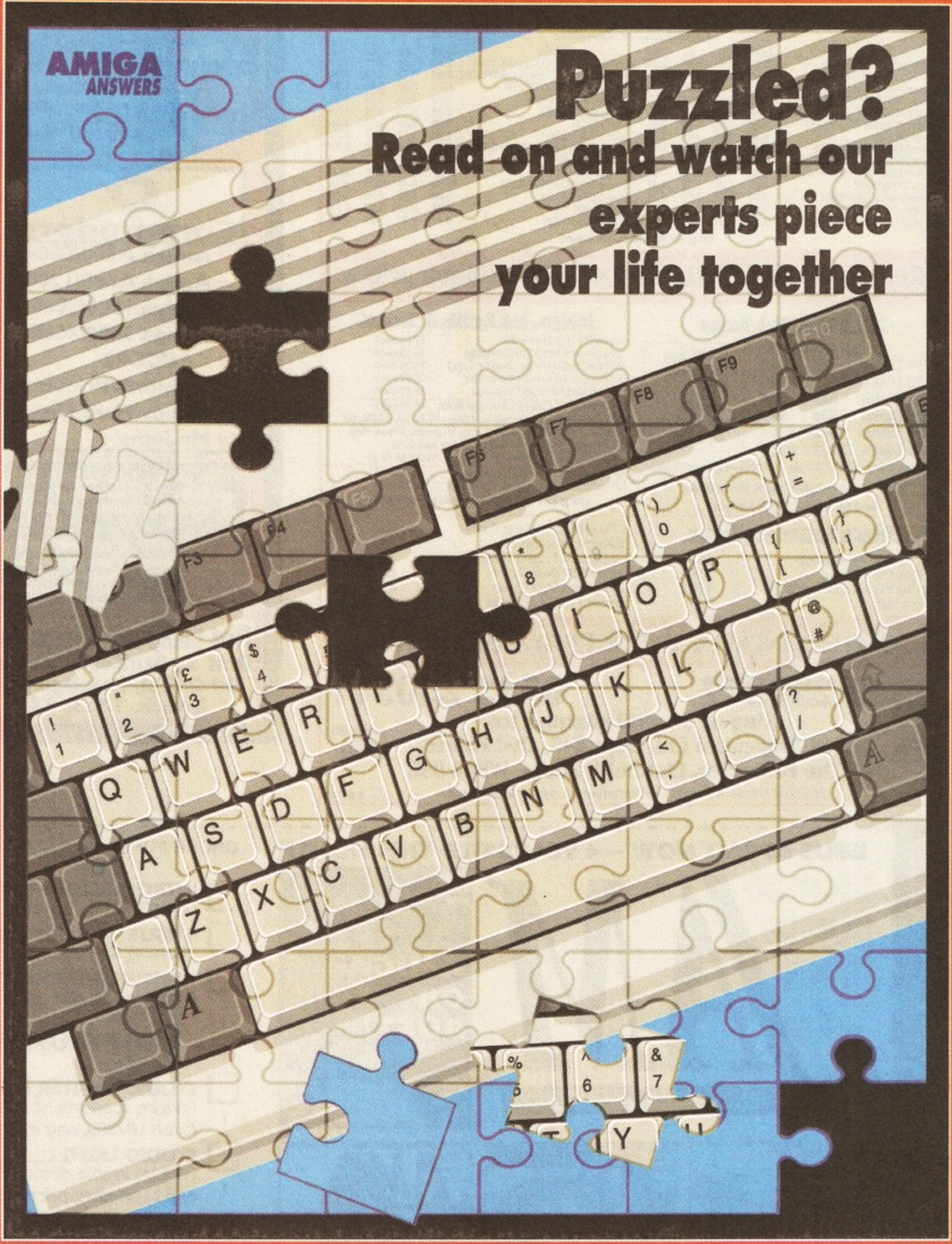
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OUR EXPERTS TACKLE YOUR REAL-LIFE PROBLEMS



USING THE ICONS TO FIND WHAT A QUESTION'S ABOUT



Beginner questions raising basic problems.



General Amiga-related queries or questions.



Queries related to Amiga desktop publishing.



Questions about monitors and TV displays.



Queries relating to general hardware problems.



Questions asking for buying advice in any area.



Printers, drivers and hardcopy problems.



Coding problems (no matter which language).



Queries about using your Amiga with video.



MIDI, sampling, software and synths.



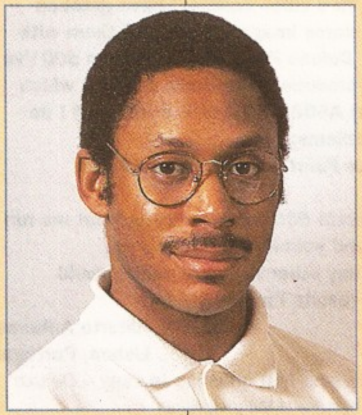
Software packages and programs queries.



Questions relating to comms, including modem.

AMIGA ANSWERS

NO PROBLEM!



Graeme Sandiford will soothe your mind and calm those tense nerves caused by your Amiga.

Hello and welcome once again, to the area of *Amiga Shopper* where you can turn to find all the answers to questions concerning your Amiga. It's my privilege, as *Amiga Shopper's* technical writer, to make sure that not one of your problems is left unsolved. Don't worry, we can help – no matter how simple or complex they may be. At *Amiga Shopper* we want you to get the very best out of your Amiga. That's why we devote more space than any other magazine to this indispensable service, so please make the most of it and keep your questions coming in. I will do my very best to find a solution to all your problems.

Don't worry if you come across any unfamiliar terms, just turn to one of our jargon-busting boxes to receive an explanation. The problems are put in a wide context for everybody's benefit. The index on the previous page is your guide to the topics covered this month.

By now, you are probably familiar with our team of Amiga experts. **Mark Smiddy** knows all there is to know about AmigaDOS and floppy drives. **Jeff Walker** is our desktop publishing, fonts and printer correspondent. **Gary Whiteley**, is a trusted expert on video applications and graphics. If you have a query about comms, we'll set our communications guru **Dave Winder** on the case. **Toby Simpson** is our code clinician. If you've got problems with anything from C to assembler, try taxing his little grey cells. Finally, we've got a man you can rely on when it comes to operating systems programming – **Paul Overaa**.

Don't be afraid to let all your queries, problems, worries, or general tips and hints come pouring in – they're what we live for. With a good tip you could be a tenner richer. Write to me and I will do my best to sort you out!

NO GO ON A4000/30

SOFTWARE

The problem is – why can't I get *CineMorph* and *Broadcast Titler* II to work on my A4000/30? They worked fine on my Amiga 2000 with AmigaDOS 2.05.

David Coutts
Aargau, Switzerland

The most likely reason that *CineMorph* and *Broadcast Titler II* don't work properly on your Amiga is because they were written before the AGA chip set was released. I heard that Innovision were releasing an AGA version of *Broadcast Titler II*. I guess that you've got an early version of *CineMorph*, because later versions (for example the one supplied with *ImageFX*) do support AGA graphics. ***Gary***

NOT SO PC AFTER ALL

GENERAL

You're probably wondering why a PC owner (also ex-Amiga owner) is writing to your magazine for help? Well, I'll tell you.

Having picked up the latest copy of *AS*, which caught my eye because of the 3D/animation content, I was fascinated by the excellent graphics done in *Aladdin 4D* and also astounded by its reasonable price. I own a 486/40MHz PC with a 40MHz co-pro, 4Mb RAM and a 170Mb hard drive. At the moment I am getting to grips with *3D Studio 2*, but after seeing and comparing some of the *3D Studio* stills with some of the Amiga's I am now wondering whether or not to get rid of the PC and buy an A4000 setup. Or will an A3000 or accelerated 2000 suffice as I would like to keep the PC for DTP.

Dave
Sheffield

Blimey – I wish I had the dosh to have the choice! If you really are keen to dump your PC and *3D Studio* (and even though I'm an Amiga user I've seen plenty of excellent work done with *3DS*) for an Amiga then I think you'd better be doing it with your eyes open. Firstly, *Aladdin 4D* might not be such a good choice. Sure, it produces nice images, but getting them built isn't always easy as *Aladdin* has one of the stranger 3D interfaces on the Amiga. Plus it isn't anywhere near such a speedy renderer as *3DS*. A better choice would be either *LightWave* standalone (around £499), *Real 3D 2* (£410) or *Imagine 3* (US$649) – preferably the former, as I think you'll find it has the smoothest learning curve.

If you want an Amiga, any of your three suggestions will be fine – but make sure that the A2000 is fitted with 2Mb of chip RAM, a fast accelerator and FPU, a big hard drive (at least 170MB) and at least 8Mb of fast RAM on board. It will also need a 24-bit display card (such as OpalVision, Picasso, Retina, Spectrum or whatever) if you want to see really sparkling images, since the 2000 (and 3000 for that matter) can only display up to 4096 colours – and that's not in high res! You'll also need a monitor capable of synching down to 15.6KHz.

In my opinion the A4000 is overpriced and underpowered and, what with the current state of Commodore's affairs, it may be that you might not be able to get hold of one for a while. But, with an 030 or 040 accelerator, 2Mb of chip RAM and 4Mb of RAM, a built-in hard drive and great-looking screen graphics, it might be worth balancing the cost (and speed) of an older Amiga against the 4000, especially if you are buying from scratch and don't have the headache of favourite pieces of hardware which won't easily work with the A4000.

Personally, I'd say learn everything about *3D Studio* that you can before you consider jumping ship – unless you don't mind throwing money around – because *3DS is* fast, and *does* produce good-looking images. If you *do* like throwing money around, send me an envelope full of folding stuff right away and I'll figure out what to do with it later. ***Gary***

WHEN *WILL* THEY LEARN?

MONITORS

I hope you can help me. I purchased a second-hand Philips ViewData Information Terminal 2 monitor (Type 311310866540) and I have tried everywhere to get a lead for it but no-one can help. I found a shop which was prepared to make a lead up, but I don't have a manual for the monitor and nobody could tell us the connections. I called Philips in Croydon, and another place called VisTec – but to no avail. Could you help us to get a lead?

Could you also tell me how much the manuals for my A600 would be, as mine were stolen, along with some other things.

Mrs Paula Warriner
Folkestone, Kent

I'm sure this will end in tears, Mrs Warriner, because I reckon you've probably bought a turkey. Your query is one which I regularly get – "I bought a second-hand monitor but I can't get it to work with my Amiga". Well, you *might* strike lucky, but buying an unknown monitor without a manual is a big gamble, no matter how cheap the monitor is. There are so many different types of monitor available nowadays, but relatively few of them which work with the Amiga.

Call Philips again, tell them what you're trying to do and make sure that they don't give you the runaround. Ask to speak to someone in a technical department concerned with computer monitors – they may actually be at another location so be prepared to call elsewhere. Have all the relevant serial numbers, model and other details ready and be patient! It isn't Philip's fault that you've bought a monitor which might not work with your Amiga. I'm sure they'll try to help you if they can, but I wouldn't be too hopeful about getting a successful result if I were you.

As for the manuals, call Commodore on ☎ 0628 770088 and enquire there. ***Gary***

TV MIRAGE

MONITORS

I have a Mitsubishi CT2125 TX TV. Now the picture from my Amiga is terrible and suffers from something like a heat haze across the whole screen. The TV is eight months old. Could it be the length of the cable attached to my A500 Plus with A520 modulator? The cable is approximately eight feet long.

M. Gibson
Mansfield, Notts

I would have thought that such a relatively short cable wouldn't cause the problems you describe but it might be the *type* of cable that is being used, and where it is positioned.

Firstly, you are using properly screened video cable aren't you? None of this bell-wire, speaker cable or mains flex hoodoo please. And the ground wire is connected properly at each end? Are you using RF or composite video output from the A520? If it's RF try tuning your AV (or whatever channel you're using) in again. If it's composite, then check your cable.

Secondly, follow where your cable actually runs. Does it pass close to any transformers or loudspeakers, or other electrical equipment which can generate magnetic fields? If it does, try moving the cable away and observing the effects on the monitor picture.

Thirdly – it might be your Amiga that's at fault, of course. See if you can try it on another monitor just to be sure. ***Gary***

AS EASY AS ...

I recently received a present of the A1200 pack, the one with *Wordworth 2*, and a new Citizen ABC 24-pin colour printer. I succeeded in setting up the hardware properly but had great problems setting up the printer driver with *Wordworth 2*. My Workbench manual suggested dragging the printer driver into Devs drawer, but I did this to no avail and it wasn't WYSIWYG printing. The free *EasyStart* software that came with the printer was anything but an easy start.

I had to type and print this letter on the school PC and it has been a lot more trouble free than my "user-friendly" Amiga and printer. I just want to create documents with graphics in *Wordworth* and get the same output on my printer as on my monitor. It can't be that difficult!

Barry Newman
Dublin, Ireland

Yes, I'm afraid it is all rather complicated because Citizen unwisely chose to use a non-standard type of printer driver to use on the Amiga with their printers. Normally Amiga printer drivers go in the Devs:printers drawer (in the printers drawer that is inside the Devs drawer) and the driver is controlled by the Printer and PrinterGfx preferences programs in the Prefs drawer on your Extras disk. But *EasyStart* is a cut-down version of *Citizen Print Manager*, which itself is a cut-down version of *TurboPrint*, which is a German made product that uses a non-standard way of printing to enhance printer output. I've more letters about *TurboPrint* and *Citizen Print Manager* than anything else I can think of. It seems to be the type of program that confuses the hell out of beginners

Anyway, you are supposed to just run *EasyStart*, select the ABC driver, select OK, and that's it. If you then run *Wordworth 2* and print something – and I mean run as in insert the Wordworth disk and double click its icon, *not* insert the *Wordworth* disk and reboot the machine – it should print perfectly first time. If that doesn't work then I'm afraid you'll have to tell me a lot more than "it wasn't WYSIWYG printing" – whatever that means – if you want me to help you. It'll probably be quickest if you contact your Citizen dealer and ask for help. ***Jeff***

LISBON CALLING

I have an Amiga 600 with 2Mb RAM. With the help of Vidi-Amiga 12 and a Hi-8 video camera I have grabbed some images and edited them with *Deluxe Paint 3*. Using *Scala 500* I've managed to produce some *Scala* projects which run OK on my A600 with 2 disk drives, but I do have two problems:

1) *Deluxe Paint* doesn't support HAM graphics

2) The *Scala 500* software doesn't let me run continuous and successive sequences.

Is there any other software which would produce the results I'm looking for?

Alberto Antunes
Lisbon, Portugal

The answer to your first question is easy – *Deluxe Paint IV* can handle HAM graphics.

I'm not quite sure I know what you're asking in the second question because earlier on you say that *Scala* works fine, but I'd guess the problem is that you can't play back complete *Scala* sequences or Amiga animation files with your A600? If that's the case, it's probably down to a shortage of memory in which to load the animation before it can be played. Once *Scala* has taken its slice of memory in order to run, there won't be much left

CODE CLINIC

Author: C.D. Maggs
Language: Assembly Language
Problem: Auto-Booting boot-block programs without AmigaDOS startup-sequences

Re-inventing the wheel is amazingly popular these days, and this month, we're going to re-invent the wheel for you. Mr Magg's problem is that of making a program boot directly off the boot-block. There are three ways of going around this; the easiest would make this month's Code Clinic no more than another four lines long – you just open a Shell window, put a blank formatted disk in DF0: and type 'install df0:'. Then create a file called "df0:S/startup-sequence" and put your program name on the first line, and then copy your program to df0:. Now re-boot computer, and HEY PRESTO! It's like magic – your program will boot and run.

OK, patronising mode off! Unfortunately, we're after a slightly different solution. If I may, I'd like to give a brief lecture first, as usual. There really is very little reason why you would ever want to make a disk which had custom boot-blocks. It's unnecessary work for the programmer, it's hassle when it comes to setting up the disk layout itself, it won't copy from normal copy programs, you can't install the disk to a hard disk, virus checkers will report it as containing a potential virus even when it doesn't, and so forth. The list goes on. If, however, after this warning, you still want to do it in a custom way, there are two methods of approaching the problem.

When your Amiga boots of a floppy drive, the first thing it does is load the contents of sectors 0 and 1 of track 0 into memory, a total of 1K of memory. This block contains some very important information, the filing system type, the checksum of the boot-block, and the block number which

```
*********************
*
*  bootblock.asm
*
*  By Toby Simpson for Amiga Shopper Code Clinic
*

      incdir   "include:"
      include  "exec/exec.i"
      include  "exec/io.i"
      include  "exec/funcdef.i"  ; YOU MIGHT NOT NEED THIS
      include  "exec/exec_lib.i" ; .. DEPENDING ON THIS FILE

DISK_CYLINDER: equ60 ; Read from cylinder 60
DISK_OFFSET:   equDISK_CYLINDER*11264
;
_EXECBASE:  equ4          ; exec.library base
;
; — Required data: ....
      dc.b  "DOS",0  ; DOS-ID
      dc.l  0  ; CHECKSUM
      dc.l  0  ; ROOT BLOCK
;
; — Firstly, store A1: The pointer to the IOStdReq structure ....
_ENTRY:     leastore_A1(pc),a0
      move.l   a1,(a0)
;
; — Allocate memory ....
      move.l   #5832,d0
      move.l   #MEMF_CLEAR,d1
      move.l   _EXECBASE,a6
      jsr_LVOAllocMem(a6)
      tst.l d0
      beq.s BB_Failure  ; Failed to allocate memory
;
; — Store memory pointer ....
      leastore_Memory(pc),a1
      move.l   d0,(a1)
;
; — Now load the data off disk: ....
      move.l   store_A1(pc),a1   ; Recover struct IOStdReq *
      move.w   #CMD_READ,IO_COMMAND(a1)
      move.l   d0,IO_DATA(a1)
      move.l   #9*512,IO_LENGTH(a1)
      move.l   #DISK_OFFSET,IO_OFFSET(a1)
      move.l   _EXECBASE,a6
      jsr_LVODoIO(a6)   ; Load the data
;
; — Now call the code ....
      move.l   store_Memory(pc),a0
      jmp(a0)
;
; — Failure routine ....
BB_Failure: moveq #-1,d0
      rts   ; Tell OS whole thing failed.
;
; — Temporary storage locations ....
store_A1:      dc.l  0
store_Memory:  dc.l  0
;
      END
```

for anything else. Simple answer – add more RAM! ***Gary***

MISSING BITS

GENERAL

I use an A500+, a GVP Series II hard drive and 6Mb of memory. My printer is a Canon BJ-200 and I also use a Power Computing mono hand scanner.

My first problem is that I cannot get *Wordworth 3* and *PageSetter II* to print the full font with larger point sizes. Despite them looking complete on the screen, bits of some characters are missing in the printouts. I have spoken to Digita about it and they say they may be able to rectify it. But I don't know who to contact about *PageSetter II*.

Second, the contour facilities in *Wordworth 2/3* and *PageSetter II* do not work. They only go straight down either side, I cannot get them to 'wrap around' the graphic. I am puzzled by the 'transparent' setting and can't find that in *Deluxe Paint III*. Even if I could, I wouldn't understand how it functions. Could that be a key? When I use the Transparent button it causes the graphic to decay dreadfully.

Rev Henry Gordon
Rhyl

The 'missing characters' problem is old and well known. It happens with many other programs that use Compugraphic fonts for printing. The more memory you have, the larger point sizes you can have, the fewer bits go missing. However, even with megabucks of memory, the bottom line is that it is a problem with the Agfa Compugraphic font format, which was originally designed for screen use (for multimedia presentations, painting programs, and so on), not for printing from DTP packages, and so Compugraphic fonts were never meant to be used at sizes greater than about 60pt.

I'llTell you how I get around this problem, although I'm afraid it means spending more money. As large point sizes are normally just for a special effect or for a short heading, I create them in *ProDraw*, save them as clips, and them import these. *PageSetter II* will import *ProDraw* clips, but *Wordworth* cannot. You may like to note that I have not yet come across this problem with *Final Copy II* or *Final Writer*, nor have I had any letters about it from *Final Copy II* or *Final Writer* users.

The Transparent option in *Wordworth* causes colour 0 in the palette to become transparent, letting the white paper underneath show through. Normally you would plan for the area around the subject of the graphic to be colour 0 so that it becomes transparent, and so that *Wordworth* can run the text around the contour of the subject.

As colour 0 in greyscale scans saved from PowerScan is black, the Transparent option will cause the graphic to have a strange appearance as it 'knocks out' that colour. Load the scan into *Deluxe Paint*, press the 'p' key to put up the palette, exchange colour 0 with white, and then select Remap from the Color menu. Now that colour 0 is white, when you select the Transparent option in *Wordworth* the graphic will not alter its appearance. However it would be unusual for there to be a solid area of white around the subject of a scan; you may have to 'paint out' these areas in white (colour 0) in *Deluxe Paint* before saving and importing into *Wordworth*. *PageSetter II* does not have a contour or 'wrap around' option. ***Jeff***

COMPANY STARTUP

BUYING

I am writing to you as I am in the process of trying to set up my new company, with which I will be looking to supply three main services:

1) Recording animations sent by other Amiga users to video tape.

2) Creating professional 3D animations for businesses.

3) Creating professional presentations.

Below is a list of hardware and software I would like to use. Could you

(a) tell me whether these are OK for the above projects and represent best value in their price range and

(b) advise me on the best way to get sponsorship as I am on income support and have a family to feed!

I will be using an A1200 (not yet bought but saving hard). Here's what else I'm considering: Genius Graphics tablet, Sharp D3750 monitor, 170Mb hard drive, Hawk card with 33MHz co-pro and 4Mb RAM, GVP G-Lock genlock, *Aladdin 4D, Imagine 3, Real 3D 2, Art Department Professional, ClariSSA, ADORage, VistaLite* and

---

contains the root-block of this disk – which is normally 880. ($370 in hex). Then there is some program code. Under normal circumstances, this code will just check that the dos.library wants to be our friend, and then returns back to the operating system some simple information. However, it is possible to simply not return from this, and execute your own code instead of the code that is placed on the disk by the AmigaDOS INSTALL command.

This is where you can, optionally, make life *really* hard for yourself. There are two ways of now loading disk data in directly. You can use the operating system trackdisk.device, or you can hit the disk hardware yourself. Hitting the disk hardware is so amazingly unrecommended I won't be helping you with it, but for those with a great deal of love for pain should go out and buy *Amiga Disk Drives Inside and Out*, by Abacus, and not come running to me when their program doesn't work on new Amigas, or indeed, *any* Amigas.

This leaves us with the trackdisk.device. And conveniently, it has already been opened (it had to be for the OS to load in the boot-block in the first place), and a pointer to an IOStdReq structure, ready for action, is passed to us in A1. So, we can then use this information to set up a direct disk track read and load our program into memory. I would recommend that you allocate this memory before loading data in, as you run a risk of corrupting the IOStdReq structure, or disrupting the operating system in some manner, and whilst you're using the trackdisk.device, the operating system is our friend! This doesn't stop you from using Forbid and Permit in between disk loads though, should you require. So, how exactly *do* we load something then? Well, firstly, let's look at defining our boot-block:

```
filing_system:    dc.l      "DOS",0
checksum:         dc.l  0
root_block:       dc.l  0
;
; — BootBlock entry point ....
;      a1 points to a valid IOStdReq ☛
structure:
_ENTRY:        our code goes here
```

We then write our code, remembering not to exceed 1K. The other thing is that the code we write *must be fully relocatable*. This means that you must make *no* absolute references. You do not know where the bootblock will be loaded in memory. This is really no hardship, as you replace things like this:

```
          leaDosName,a0
```

with the PC relative version:

```
          move.l   DosName(pc),a0
```

Also, do not use JMP and JSR, use BRA and BSR – the PC relative versions of these instructions. So now we need to know exactly what to write for our boot-block code. For an example, we'll allocate a tracks worth of memory, and load track 60 off the disk into memory at that point, and then we will assume that track 60 contained our program and run it. Of course, this won't work for you unless you have a program on track 60 which is relocatable and ready to go, but it is easy to adapt this to make it work for you.

Here are the steps that our boot-block needs to do:

1. Store out important information that it will need later.
2. Allocate some memory to load our data.
3. Load the data itself.
4. Execute that code.

Have a look at the listing to see what we have done. This program was tested with DevPac 3, and a blank disk, and it worked fine. Remember you still have to format the disk before use, and don't use one with something important on incase you make a mistake. However, there are still two catches before you can test it. The first is how do we calculate the checksum to place in our boot-block code, and the second is how on earth do we get it on to the bootblock itself?

The first one is easy. You can either use a program such as Timo Rossi's *Monitor*, Version 1.65 or above, an excellent PD monitor program which is invaluable for this sort of thing, or you can use the following short program:

```
_CHKCALC:   leaBootBlock(pc),a0
          lea4(a0),a1
          clr.l (a1)  ; Clear any current ☛
checksum
          move.w   #$ff,d1  ; Long-Words to do.
          moveq #$00,d0  ; Clear checksum
chk_Calc:      add.l (a0)+,d0
          bcc.s chk_Clr
          addq.l   #$01,d0
chk_Clr:    dbra  d1,chk_Calc ; Do all blocks.
          not.l d0
          move.l   d0,(a1)  ; Store out new ☛
checksum
          rts
```

Having calculated our checksum, we are faced with the second puzzler. Getting it on to the disk. C programmers, and indeed, good assembly language programmers out there might like to write a small utility to place their program on the boot-block, remembering that they will need the raw code itself, without the AmigaDOS hunk headers. This is the best solution. If any of you try this and can't get it running, send what you have into *Code Clinic*, and I'll get it fixed for you in a future episode! Alternatively, users who have or can obtain Timo Rossi's *Monitor* program will find that the work can be done for them.

Before I sign off this month, I'd just like to thank P.G Hardwick of Cheshunt, Herts for sending me a copy of a version of a requester program I gave several months ago which worked under 1.3. A good example of adapting code for your own purposes, and wise choice of requester text!. Happy coding! ***Toby***

PAGESETTER II CGFONTS FOR BEGINNERS

DTP

From letters in recent issues it would seem that I am not the only one having trouble loading Compugraphic fonts into *PageSetter II*. The manual is completely useless in this respect. I have managed to copy the '.lib', '.metric' and '.atc' files from the George Thompson Services disks to a separate disk, but how on earth do I load them into *PageSetter II*? I have tried all ways with no result. Idiot proof instructions please.

R Lyons
Pudsey, W Yorks

OK, you are working with an old Workbench 1.3, A500 with 1Mb of total memory and two floppy disk drives, so we'll set-up *PageSetter II* with this in mind.

First, boot from your copy of Workbench as normal (not the original disk that came with the Amiga, always work from a backup copy!) and initialize (format) a new floppy disk, giving it the name CGFONTS.

Use your external drive to format the CGFONTS disk. If you don't know how to do this, chapter four of your A500 manual has a section dealing with Initializing and Renaming disks.

The disk you have just formatted is the one on which you are going to keep your Compugraphic fonts. You may want to have a whole library of these CGFONTS disks, but for the moment we'll stick with one.

Now remove the CGFONTS disk and put the George Thompson Services' CG Type Fonts #1 disk in the drive (its actual name is CGFONTS_1). If you've read the Contents and Info files on this disk you'll know that there are several typefaces on it, each of which comprises several files stored in a directory that has the same name as the font.

Let's copy the Albatross typeface on to our CGFONTS disk.

Open your Workbench disk window, or in other words double click on the Workbench disk icon. You should see an icon called Shell appear in that window. Double click the Shell icon and another window will open. This is a window into which we can type AmigaDOS commands.

Type the following command into the Shell window, not forgetting to press the Return key at the end of the line:

```
COPY ☛
CGFONTS_1:ALBATROSS/ALBATROSS.☛A
TC TO CGFONTS:
```

The character between S and 1 in CGFONTS_1 is called an underscore. You type it by holding down the Shift key and pressing the minus sign key (the one between the number zero and the equals sign). Note also the colons (or 'double dots' as some people call them) after the disk name.

The part of that command line that reads CGFONTS_1:ALBATROSS/ALBATROSS.ATC is the name of the file that is to be copied, preceded by the 'path' to the file – you can read it as "the file to be copied is on a disk called CGFONTS_1 in a drawer (or directory, another name for the same thing) called ALBATROSS, and the name of the file is ALBATROSS.ATC".

The disk name is always followed by a colon, directory names are followed by slashes (the one on the question mark key).

The Workbench disk will whirr a bit while the Copy command is loaded, then the CGFONTS_1 disk will whirr while the ALBATROSS.ATC file is copied into memory. The Amiga will next ask you to place the volume (the disk) called CGFONTS in any drive. So remove the CGFONTS_1 disk from the external drive and put the CGFONTS disk that we prepared earlier into it. Don't worry about clicking the Continue button in the requester that has appeared, the Amiga will automatically notice that the correct disk is now in the drive, provided it is called CGFONTS.

The CGFONTS disk will whirr for a while as the ALBATROSS.ATC file gets transferred from memory on to the CGFONTS disk.

If the requester asking for CGFONTS remains on the screen after disk activity has finished, it means that you haven't named the disk CGFONTS — check for leading or trailing space characters, and delete them if you find any. It's either that or you've typed the command incorrectly.

Now you need to copy the ALBATROSS.LIB and

Scala MM300.

As you can see, this is already quite a list. There are other items I would like (disk drive, sampler, digitiser, scanner etc), but I can only take one step at a time.

I'm not new to the Amiga (I had to sell my A500 about a year ago) and I have some very good ideas. I'm fairly proficient with DOS and WorkBench and I have a working knowledge of 3D programs in general, so I know what I'm doing. I would be very grateful for any help you can give me concerning both issues (including the A1200, if at all possible). Could you also print my name and address so that anyone who may feel like offering advice or help can do so directly.

David Lockyer
114 Northbourne
Farncombe, Godalming
Surrey, GU7 3SQ

There's an important omission from your list David – a paint program. For the kind of work you plan on doing I'd say that either *Brilliance* or *Deluxe Paint IV AGA* would be indispensable. As far as 3D software goes, I'd personally go for the new *Lightwave* standalone (£499 from Silica Systems) but *Real 3D 2* or *Imagine 3* would also be excellent choices. I'm not a great *Aladdin* fan because I find it more difficult to work with than the other three.

As for the rest of your software choices – fine. Just make sure that the *Scala* you choose is either *MM200* or, preferably, *MM300*.

Turning to your hardware requirements, I'd basically agree with everything on your list apart from the graphics tablet. Use the Amiga's mouse and put the savings toward a second floppy drive and a good video digitiser such as Rombo's Vidi-Amiga 24RT – two items which I reckon are far more important than a graphics tablet. Don't forget to buy a good RGB monitor too, a multisync if you can afford it, as working with a TV really isn't good enough when you're preparing graphics.

I'm afraid there's probably little chance of sponsorship in these times of depressed economy and cash flow problems. All I can suggest is that you contact your Regional Arts Board and any local arts and video groups for advice. But don't get your hopes up – like everything else in this country the arts is suffering under the twin evils of dwindling grants and increasing bureaucracy and it might be easier trying to extract blood from a stone. You could also try asking the DSS about any schemes they might have available, but again I'd regard this as a long shot as I've not found them to be particularly helpful when I've asked them similar questions over the periods when I've been forced to sign on.

However, the best of luck with your endeavours and don't forget to work hard and keep your accounts balanced, because you can be sure the tax man will want his slice of the cake – when you start earning money. ***Gary***

CLOSE TO THE EDIT

VIDEO

I have a 1Mb Amiga 2000 and have been thinking of using it for video titling and editing. I've been using a camcorder for many years and thought it about time I started making my videos look more professional. I have an old VHS-C camcorder so I've looked at the Rendale 8802-FMC genlock. What do you recommend? I have seen a lot of articles on how to title films and do titling effects, but I've not seen very much on how to *edit* films. If it can be done, what equipment and or/software will I need?

Hugh Simpson
Marston, Oxfordshire

The first thing I'd advise you to do is to buy more memory for your Amiga, because once you start working with titling and graphics you'll soon get frustrated that you can't work in anything but lo-res except for the occasional simple screen. If you don't want to add more memory then your choices will be pretty limited.

For simple titling you could either get Alternative Image's *Big Alternative Scroller 2* or Scala's *Scala HVT*, both of which should work OK on a 1Mb Amiga. *Scala HVT* offers more in the way of image to image transitions and an easier user-interface, but it's scrolling text might not be quite as smooth as *BAS2's* if you don't have a Super Denise chip fitted in your Amiga. If you want to use a paint program go for *Deluxe Paint* at this stage – but do add more memory first, otherwise you'll only get very short animations out of it!

As for the video editing, the first thing you'll need to get hold of is another video deck for editing on to from your camcorder. Make sure that it can be controlled by infrared remote control (and also check that the camcorder can be controlled by LAN-C or Control-L ports). Then you'll need some Amiga-operated editing hardware. The simplest (and least expensive) solution is probably Gold Disk's *Video Director*, which performs cuts-only editing as accurately as your video decks will allow. Another editing option is Scala's *Echo*, an add-on to their *Scala MM300* multimedia program, though this will mean adding a hard drive to your system, as well as at least 4Mb of extra memory – and preferably 2Mb of chip RAM and an accelerator. You'll also need *Scala MM300*.

A better path might be to sell your A2000 and buy an A1200 with a hard drive and 2Mb of extra

ALBATROSS.METRIC files from the CGFONTS_1 disk to the CGFONTS disk in the same way.

When all three files have been copied on to CGFONTS, that's the complete Albatross typeface copied. Now repeat the process for any other typefaces you want to use.

You might also want to copy the typefaces from the PageSetter II Fonts & Utilities disk on to your new CGFONTS disk:

```
COPY PSUTIL:CGFONTS/T#? TO ☛
CGFONTS:
```

The #? is a wildcard sequence. That command will copy all files whose names begin with the letter T from PSUTIL:CGFONTS/ on to the CGFONTS disk.

I doubt very much whether you'll get more than about eight Compugraphic typefaces on one floppy disk, so for this first CGFONTS disk, copy the ones you know you want to use now rather than the ones you think you might want to use later.

When *PageSetter II* is run it will look for bitmap fonts in a directory called FONTS on whatever disk you booted from – remember, I advise you boot from your Workbench disk, not the *PageSetter II* disk – and it'll look for Compugraphic typefaces in a 'logical device' called CGFONTS: (note the colon on the end). Don't let the term 'logical device' spook you, for the moment all you need to know is that the names of disks are treated the same way as logical device names. So our disk called CGFONTS, when placed in a drive, effectively becomes the CGFONTS: logical device.

If it finds CGFONTS: *PageSetter II* looks to see what Compugraphic typefaces are available there, remembers them, and then opens its own screen for you to start work.

Have you spotted the flaw in the system? Once *PageSetter II* has looked in CGFONTS: and remembered what typefaces are there, these are the only typefaces available during this work session – or to put it another way, you can't stick in another disk with more typefaces on it. All the typefaces you want to use during your DTP session must be in CGFONTS: at the time you run *PageSetter II*.

With a hard drive you'd bung all your Compugraphic typefaces into one massive directory and use the Assign command to make this directory the CGFONTS: logical device. No problem, all the typefaces you want to use are available. But working from floppies you need to build a collection of CGFONTS disks that contain different typefaces for different types of work.

There is one more disk you need to prepare, called CGCACHE. This disk will store bitmap representations of any Compugraphic characters you use so that they don't have to be calculated every time you type them.

Working from floppies – the time saved isn't so great, but it certainly cuts memory usage, that's for sure. So format a disk and call it CGCACHE. At certain times the Amiga may put a requester on the screen asking for this disk to be placed in any drive. Simply do as you are asked.

And this is the way I would run *PageSetter II* on a dual floppy drive Amiga: I'd boot from my working copy of Workbench, not from the *PageSetter II* disk. Then I'd remove Workbench and put the *PageSetter II* disk in the internal drive, and my CGFONTS disk in the external drive.

I'd run *PageSetter II* by double clicking on its icon, and when it had finished loading I would remove the *PageSetter II* disk and put my CGCACHE disk in that drive.

No doubt the Amiga will ask me for the *PageSetter II* disk back at some time, and maybe even the Workbench disk. At which point I'd oblige. And I'd have a few blank disks by my side, ready formatted, on to which I would save my *PageSetter II* documents.

Eventually I'd get sick of swapping disks and buy a third and perhaps a fourth floppy drive, and then I'd realise that another floppy drive didn't help very much and that I should have saved my money and bought a hard drive instead.

Finally, to save you having to write again, the next problem you will have will be Compugraphic characters not printing properly. This will be because you do not have enough memory and there will be nothing you can do about it except buy and fit some more memory. A sensible minimum for DTP is 4Mb.

Finally, finally. I should emphasise that these instructions are for *PageSetter II*, not *PageSetter3*, which is a completely different bucket of fonts and another long story. ***Jeff***

RAM. More expense, of course, but nobody said video editing was going to be cheap. The advantage of the *Scala* combination is that (when used with a genlock) video can be edited and titled all in one go, avoiding the generation loss which can so degrade VHS images during editing.

I just mentioned genlocks, and since you already know that you need one I'd just like to recommend the Lola L100 MiniPro as a cheaper alternative to the Rendale FMC. But if you want really cheap (no frills like fading but good quality nonetheless) check out Lola's L520 genlock. ***Gary***

AHAR, JIM LAD

GENERAL

Having recently bought an A600HD, a friend gave me several game disks, all of which contain games for younger children, and all of which are self-booting. When I tried to copy these disks to make extra back-ups, the icons of the back-up disks all had the same name – DF1:NDOS. I tried to change these names to more appropriate ones, but the Amiga tells me that each is "Not a DOS disk". How do I give them proper names?

Andie Nixon
Barnsley, S Yorks

By going out and buying the software yourself. To prevent people 'pirating' their products – or stealing them to use the legal term – games software houses prepare their disks in a special way so that they cannot be copied. If you do try to copy them, you end up with NDOS – not a DOS disk – which means that the Amiga does not recognise it as a valid floppy disk and will not let you use it in any way at all, except to format it of course.

Every time you take a copy of a piece of software from a friend you are taking food out the mouths of the children of the person who wrote that software, and out of the mouths of the many other people (and their families) who were involved in bringing that software to market. ***Jeff***

GOING TO THE STATES

SOFTWARE

In April a friend is going to work in the States. He has a standard Amiga 500, with a substantial software collection and would like to take his Amiga with him. Will a British spec A500 work in the States and would British software work on an NTSC Amiga? We realise that a new power supply would be needed. If it's not worth taking the Amiga would he be better off buying a PC over there. On a recent trip to North Carolina where he is going to work all the computer stores seem to be biased towards the PC market.

Stephen Wood
Blackburn Lancs

To get a UK machine to work in the States you need more than a new power supply the machine needs to be modified to cope with the 60Hz frame rate. In theory such modifications could be made but in practice it is unlikely to be worth the cost. Software-wise there will be problems with some programs aimed at the UK market, eg those which open full PAL size screens without checking whether they are running on an NTSC or a PAL machine. With these programs they load and run OK but on an NTSC machine you'll loose the bottom part of the display – unfortunately the only way to tell whether this will matter or not with a particular program is to run it and see.

In the States PCs are big on both the business and home-computing fronts. Interest in the Amiga is certainly not as strong as it is in the UK, but those users who are involved with the machine are *very* dedicated and there is access to a lot of technical help. ***Paul***

550C WOES

PRINTERS

I've recently bought a Hewlett-Packard DeskJet 550C. A long time ago I sent off to JAM for the 500C driver, and this works fine with Workbench, and I was hoping that I could save the driver on to *Deluxe Paint III*. There are many drivers already on *Deluxe Paint III*; the closest to the 550C was called HP_DeskJet. So I selected this and promptly drew a picture. When I went to print in colour I discovered that you cannot print in colour using that driver, so I went through all the the printers in Preferences and found that the HP_PaintJet driver printed my picture in colour. The only problem was that a picture which filled the whole screen was shrunk into the top corner of my paper, leaving me to use a magnifying glass to see it.

I want to put the 500C driver on to *Deluxe Paint III*, but I don't know how to. Can you help? And can you tell me how to get hold of a printer driver for the 550C?

Stuart Bates
Wokingham, Berks

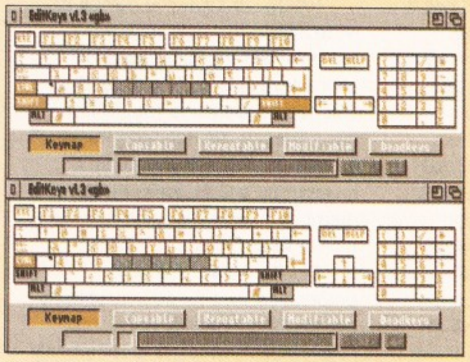
Printer drivers are located in the SYS:Devs/Printers drawer — this means the Printers drawer, which is inside the Devs drawer, which is on the disk you booted from (SYS:). I say again, on the disk you booted from. Whatever disk you boot from is automatically given then name SYS: by the Amiga. So if you boot from Workbench, the Amiga will look for printer drivers on that disk; if you boot from the *Deluxe Paint* disk, the Amiga will look for printer

RUSSIAN LETTERS

DTP

***Final Copy II* is supposed to be compatible with Type 1 fonts. Recently I bought a PC Type 1 font called Minion Cyrillic. I wrote a little ARexx program to display the characters of the corresponding ASCII codes from 32 to 255. I was very surprised and disappointed to see that only the Latin characters appeared, and none of the Russian ones. In the encoding of the file I see some strange things: dup 186 /afii10101 putdup 187 /guillemotright putdup 188 /afii10105 put**

The 'guillemotright' seems familiar to me, but I suppose the 'afii...' thing has to do with the Russian characters. I have a keyboard editor.



he extended 'gb' keymap characters which can be typed at the keyboard with Alt or Shift-Alt held down.

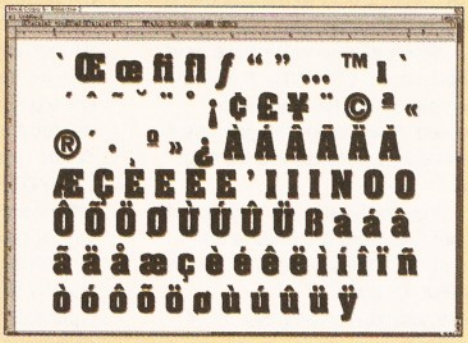
Could you please tell me how I can get these characters?

Luc Vileyn

The number after 'dup' is the character number (not the same as the ASCII code number), the string between the '/' and 'put' is just the name of the character and doesn't have any real bearing on the actual encoding of the font.

You are correct in thinking that it is your keymap that decides which characters you can type at the keyboard and which you cannot, but I'm afraid this doesn't mean that you will be able to alter a keymap so that all the characters in an extended ASCII character set can be typed. Some extended ASCII characters (which are those characters with codes between 128 and 255) can be typed by holding down the Alt key while pressing another key, or by holding down the Shift key and the Alt key together, and then typing another key. Figure 1 shows which characters can be typed in this way when the 'gb' keymap is loaded. If you try these key combinations while in *Final Copy II* with your Cyrillic font loaded, you will learn which characters you can type.

Programs have to invent their own ways of enabling you to type characters which are not accessible from the keyboard. Some Amiga programs use the MS-DOS method of holding down the Alt key while typing the ASCII code on the numeric keypad, other programs will put up a panel of all the entire Amiga character set and let you select one with the mouse. *Final Copy II* has no such feature. However, on Fish Disk 754 there is a program called AltKeyQ which will provide you with this facility. (It needs Workbench 2.04 or better). I have used this successfully with *Final Copy II* to access all the characters in a font (see figure 2). However, the ASCII codes for characters may not be the same as the character number in the Type 1 font. You will need to type the font one character at a time (using the AltKeyQ method) to discover which characters are mapped to which ASCII codes.



Using AltKeyQ with Final Copy II to type non-keyboard characters in a font.

It is possible that the encoding scheme used for your Cyrillic Minion font is not compatible with *Final Copy II*. Without having the actual font I cannot be sure. If this is the case it may help to run the font through *TypeSmith* and export it with Adobe Standard Encoding. ***Jeff***

drivers on that disk.

There is no need to install drivers on to the *Deluxe Paint III* disk; instead you should use the Amiga the way it was designed to be used – always boot from your Workbench disk, and then run applications by inserting their disks and double clicking their icons. This way the proper 'system' is available to all applications instead of the cut down version that will be on the so-called 'boot' disk for an application. If you work this way, you'll find that the driver you have selected and saved in Preferences on the Workbench disk will be used by *Deluxe Paint* and any other program you print from.

From your use of the term 'Preferences' I am guessing that you are not using Workbench 2 (because that program was split into many different programs after 1.3), in which case the only support you've got for the 550C printer will be with *Personal Paint 4*, which comes with a standard 550C driver. Workbench 2/3 users can get much better DeskJet support with Studio Printer Software. There are no 'PD' drivers that I know of for the 550C or 560C printers. ***Jeff***

SAMPLING – A NOVEL APPLICATION

MUSIC

I'm a jazz musician who studies solos off CDs. I want to be able to sample a solo and then play it back at 1/2 or 1/4 speed without a change in pitch (called time/pitch stretch/compress) to work out the notes. After doing a bit of research it seems that *Audiomaster IV* is the only software capable of doing this but it seems to have disappeared from the shelves and no-one is stocking it. Any idea what the resulting sound would be like and, incidentally, where I can get a copy?

Max Oliver
London

Most musicians still use a multi-speed tape machine for doing these sort of things. They record the passage from CD and then put up with the fact that the pitch goes down by an octave when the tape playing speed is halved. The more modern sampling approach, as you know, eliminates the pitch change. For your purposes the quality of 8-bit sound ought to be fine (especially when sampling from CD) although in practice the sample based approach will be slower because it is a bit more 'fiddle-some' to do.

As far as I can tell *Audiomaster IV* is still alive and kicking but for some reason or other the companies that supply the retail outlets do not seem to be stocking it. *Audition 4* is another possibility but again supplies seem to have dwindled of late. The only thing I can suggest is that you contact as many retail and mail-order outlets as you can in the hope that eventually you get lucky! ***Paul***

ARCHIVING PROBLEMS

GENERAL

When I attempted to de-archive *Amiga Shopper's* Shareware Disk (No 1) it failed. What happened and how do I get it to de-archive.

Bill Power
Portadown

I'm not too sure what went wrong with your de-archiving operations although I suspect that it might be related to the fact that you only have a single drive Amiga so here's a nice easy way to do things on such a machine. Open a shell window and make RAM: the current directory by typing... **cd ram:** Then insert your *Amiga Shopper* shareware disk and type... **dir** to give you a contents listing of the various archive files present. Shareware disk No 1 has a copy of lha on the disk so to extract the files from a specified archive into the ram disk you can use this type of command...

df0:c/lha x df0:filename

For example, to extract the files from the dirwork162.lzh archive the command you'd need to type would be...

df0:c/lha x df0:dirwork163/lzh

Once extracted these files can be copied from the RAM disk on to floppy. You can, incidentally, get a list of all lha commands and options by typing the name of the program without and arguments. In your case you'd type...

df0:c/lha

to get these details because the lha program is in the c directory of the shareware disk. ***Paul***

SCALA TO MAC?

SOFTWARE

As a staff member using the Amiga to produce computer graphics for the video side of our unit I have been approached by a student wishing to convert existing *Scala* scripts to be used within a Mac-based CD-ROM which he is compiling.

These scripts took months to create and were used in an actual video production so, as you can imagine, both of us are reluctant to start again from scratch. There's no problem with single picture conversion to TIFF – it's finding a suitable script converter to handle the animated files. The same goes for *DPaint* anim files.

Stephen Evans
Napier University, Edinburgh

Now, this is a confusing one! From the last part of your letter it seems that you want to convert Amiga animations to Mac-compatible ones, but otherwise

you want to convert the *Scala* scripts to run on a Mac? Or do you want to get the whole *Scala* presentation over to the Mac – script, backgrounds, text, brushes, and all, and have it run just like it previously did on the Amiga?

I'm afraid from what you've told me that I can't give much of an answer because you don't mention what you want to do with the Mac – apart from make a CD-ROM. Will the presentation be interactive? Or will it just be a playable presentation? Do you want all the text and transitions to replay just like in the Amiga version?

As far as converting the scripts goes, what program do you plan to convert for? *Scala* scripts only work with *Scala* (or the *Scala* player), and so need an Amiga to run on. Any Mac-based program would, I presume, require its own specific scripts – ones which will be unlikely to look much like the *Scala* ones at all. So unfortunately it looks like a complete rewrite if this is what you mean.

As for converting the 'animated files', once again I don't clearly understand what you mean. Do you mean converting a *Scala* presentation? If you do, there's no possibility as they are run directly from the Amiga, calling the images and text as needed and then moving on. No 'animation file' is created. As for *DPaint* animations, you can convert them to .FLI or FLC files using a shareware program called *MainActor1.5* and take it from there.

If I'm not mistaken neither you nor the student have really grasped what is involved here – and the fundamental differences between *Scala* presentations and Amiga animations. Yes, you'll be able to use TIFF and converted Amiga animation files, but *Scala* just doesn't work this way. I guess you're going to have to start writing the whole presentation again from scratch if you want to use a Mac. And I'm sure that hearing this will really make your day! ***Gary***

SCRIBBLE BOTCH

I have made a complete botch of installing Scribble on my hard disk. I followed the instructions, but when I run it a requester appears asking for the disk to be re-inserted. I then tried re-installing it by dragging the icons to a new drawer and this seems to have worked. But I now want to delete all the files and try again.

As soon as I pull down DELETE a statement appears at the top of the screen saying: "Error while removing Scribble! (222) object is protected from deletion". I have also noted that when I boot up there is a statement just below the copyright text before the Workbench icons appear that says: "Can't find Work:Scribble".

K. Bond
Kings Langley, Herts

Deleting the program is easy. Just select the icon, click on Information in the icon menu and a requester panel will appear, giving various file characteristics. Over to the right of the requester you'll see a set of file attribute flag settings which include a 'deletable' flag. Select this and then save the new settings and you can then delete the file.

I have not got a copy of Scribble, so I'm not sure what support files/assignments it requires nowadays. I suspect however that your initial problems stemmed from either not moving all of the relevant files to the new drawer, and/or not altering the assign statements in your user-startup file to reflect the new location of Scribble and/or its support files. When Scribble installs itself I would assume that, by default, it sets up a directory called Scribble in your Work: hard disk partition. You have now moved the files elsewhere and presumably deleted the original Work:Scribble drawer (that would explain the "Can't find Work:Scribble" message).

As well as deleting all the files and directories related to Scribble you also need to check your user-startup sequence and remove all Scribble related assignments that either you or the installation process inserted. You should do this before you try re-installing the package because some installation scripts can be thrown by old assignments due to earlier installations. ***Paul***

THE PROLOGUE

I refer to *Amiga Answers* issue 36 where Chong Hin Chee writes asking why *Final Writer* would not show an EPSF created with ProDraw.

I have *ProDraw 3.02* and *ProPage 4.1*, and some time ago I had a similar problem. I ran a *ProDraw* EPSF through Post 1.7 (*Final Writer* uses the same post.library) and got the error 'undefined command mir'. So I looked through the EPSF file for 'mir', and after comparing the *ProDraw* PostScript prologue file ('pdpsprlg') with the one that comes with *ProPage 4.1*, I came upon the answer. The 'pdpsprlg' file has a typo in it!

About half way through that file the following lines can be found:

```
/initpage { gs mir {pagexsize 0 translate -1 1
scale} if   0 pageysize translate   0.96 -0.96
scale} bdef
```

Remove from the 'pdpsprlg' file the line above that begins with 'mir', and then *Final Writer* will happily import and display a *ProDraw* EPSF.

Paul Stanley

I've just checked my *ProDraw 3.03* 'pdpsprlg' file and that line doesn't exist in it, so it does indeed appear to be a bug in the *ProDraw 3.02* PostScript prologue. Well spotted. And thank you for saving my embarrassment by not pointing out that I was talking out of my bottom when I said (in that reply to Mr Chong) that *Final Writer* only imports Illustrator88 format EPS files. It will import and display any EPS file. The fact that all the supplied clip art was in Illustrator88 format was what threw me. ***Jeff***

MESSED-UP SCREEN

When my Microvitec 1440 multisync monitor has been on for a long time (ie 5 to 6 hours) it starts to flicker and I get a block of what looks like out of place screen data that disappears very quickly, as well as short horizontal bands of messed up screen around 1 pixel high which appear in isolated places. The latter looks a bit like HAM fringing and appears at the edges of severe colour changes.

So far I've only noticed this on my Workbench screen, which is 8 colour 800 x 600 Super72:Super High Res Laced. Reducing the number of colours or the screen resolution seems to lessen (or even cure) the problem. According to the manual the monitor (which cost a lot of money) should have no problem with this mode. Can you tell me what is wrong with either the monitor, or my Amiga 1200?

Also my screen tends to be affected to a lesser degree when my hard drive is accessing stuff. My machine and hard drive came from the now defunct Software Demon. I understand that they used 3 1/2" drives and that to do this they had to remove the Amiga's internal shielding. Will this damage my monitor – and is there any way of curing the problem?

S. Boddy
York

It's no surprise that your monitor is affected when the hard drive is accessing data if the Amiga's internal shielding has been removed. As far as damaging your monitor goes I wouldn't worry about it, it's only electronic interference. I'm actually more concerned why Software Demon didn't find a way of reshielding the machine when they'd finished installing the drive.

Have you called Microvitec for advice on your monitor problem? There may be something that you've missed when you set it up to work with your Amiga. Also, does the same problem occur when you use other screen modes? Are you short on chip memory when you run certain programs? Alternatively, it may be your Amiga which is at fault, possibly caused by overheating in one of its components.

One thing you could try would be to connect your Amiga to a standard TV and wait and see if the problems start to show themselves after the time period you describe. True, it would have to be in a standard 15.6KHz screen mode but it will give you an indication of whether the Amiga is OK or not. Try to duplicate the same conditions you would normally have (which software is loaded, etc) and observe closely. Also, if you can try the monitor on another A1200, all the better. Anything you can do to isolate the source of the problem will obviously help you to solve it. ***Gary***

PRINTER DEVICE WON'T OPEN

For the first time in all my years of home computing – 12 at the last count – I've finally come up against a problem I can't solve myself. I've owned an A1200 for a year or so, and I am more than happy with its performance. (All you 1.3 and 2.04 users out there don't know what you are missing). At last I got the money together for a hard drive.

After careful consideration I chose a 340Mb Overdrive. It came with Workbench installed, and I spent hour after hour installing games and utilities... A message to the thousands who don't have a hard drive: get one – you wouldn't believe the amazing difference it makes to the power of Workbench.

Anyway, after what I'm sure are the usual hassles with Assigns and so on, I hit a major problem. After I've booted from the Overdrive, any program I try to print from tells me that it is unable to open the printer device. The only programs I've found to work are *PageStream 2.22* and *IntroCad*. I've managed to circumvent this problem by compiling a special boot-up floppy for when I want to print a file, but obviously this is just a temporary fix.

What can I do? I've checked everything I can think of. The 'printer.device' file is in Devs. I'm at my wits' end. Any suggestions?

P Barton
London SW16

The two programs you mention that work are two of the handful of Amiga programs that do not print in the standard Amiga way — through the standard Amiga 'printer.device', that is, so they do not need to open it. Nor do they need to open a standard Amiga printer driver.

You say that printing works when booting from a floppy, but not when booting from the hard drive,

and that the 'printer.device' file is in Devs on the hard drive. Hmm. The are several occasions when the printer device cannot be opened:

● When some other program has it open, or, upon quitting that program, it has failed to close it. The printer device is one of the rare things on the Amiga that can't be multitasked. You can test for this by removing all non-standard stuff from your User-Startup script and/or WBStartup drawer, then trying to print immediately after booting from the hard drive. If the printer device cannot be opened, then it will not be because of some other program.

● It could not be opened simply because the `printer.device' file is not where the system is looking for it. You say you've checked this, but do double check that it is in SYS:Devs on the hard drive – SYS: being the partition from which you boot.

● The printer device cannot be opened if the system cannot find the printer driver which has been previously selected and saved in Printer prefs. Check that the printer driver you are using on your floppy disk is also in SYS:Devs/Printers on the hard drive.

And that's it. From an operating system point of view, it has to be one of those three. If you've checked all three and the printer device still won't open, then the only thing I can think of – and this is very, very unlikely – is that there is something peculiar about the Overdrive, or the filing system or parameters used to set-up the Overdrive, which is preventing the particular part of the hard drive which contains printer.device and/or your printer driver from being accessed. ***Jeff***

FAULTY MODEMS?

COMMS

I have just been given a Dataflex Design Pocket Stradcom V.21-V.22 battery modem. I have used the system disk with a PC emulator and tried NComm. But I cannot get it to dial out on the phone. It looks to be working on the screen. Do modems have drivers like printers and do I have the wrong one or is my modem faulty? I've also replaced the battery just in case.

Ian
Bootle

Modems don't have drivers in the way that printers do, but most of them are controlled through a standard set of commands. These were first set up by the Modem manufacturers Hayes, so they are usually referred to as the Hayes Command set. Although there are some variations between manufacturers in the specifics of individual commands, most modern modems should respond to the basic commands included in this.

You don't give any specific details of what "Looks to be working on screen" exactly means, so I'll assume that you haven't tried a few basic things. All of the Hayes commands are prefixed by AT, so typing

```
AT
```

in a comms program such as NComm or term should give the response "OK". This indicates that the modem is ready and awaiting your instructions. If you don't get any response, you should check the settings in your comms program. If you have any handshaking turned on, turn it off and try typing

```
AT
```

again. Also check that the baud rate (the speed at which data is sent to the modem) is set correctly for your modem. This shouldn't be a problem for most modems, but some get a bit annoyed if you send data at the wrong speed. For a V.22 modem, try a speed of 4,800 baud.

If the modem is responding correctly to the AT command, try typing

```
ATM1
ATDT
```

If all is well with your modem, you should hear a dialtone coming from the modems internal speaker. This means that the modem is picking up the phone OK (in a similar way to you picking up the handset of your telephone). If you don't hear anything, you should check that the phone lead is plugged in correctly to both the telephone socket and the modem. If this seems to be alright, try using another lead and test the phone line by picking up your telephone.

If you still aren't getting anything, then the modem is probably faulty. Modems like the one you were given are extremely cheap these days (which is probably why you were given it), so they usually aren't worth repairing. Don't panic; you can probably pick up a cheap second hand V.22 modem for around £30-40. ***Richard***

SPEAKING IN VOICES

GENERAL

I was reading your July issue (number 39) "Amiga Answers" section when I came across a letter from J.H.Wilkins from the Isle of Wight. In his/her letter s/he asked: "Is there any hardware to connect to the Amiga that will allow sound/voice operated control?"

The answer was to the effect of "not on your nelly, mate!". The answer was strictly correct, but I have a piece of PD software called *Voice CLI*, which you can get from PD Soft of Virus Free PD. This is a program which takes it's input from any (or practically any as far as I can see) common or garden 8 bit sampler.

Although not a hardware answer, it is good and has worked flawlessly on my A1200 when I had the whim to use it. However, it is slow as Marks answer points out that any solution will be intensive on the CPU, and it also takes a fair chunk of memory.

These things aside it really is very good. I hope that this might be helpful to J.H.Wilkins and I wish them a good rest of their lives.

Stephen Adams
Belfast

There are in fact two systems of this type : *VoiceCLI* and *Voice.library* (available on Fred Fish disk 618). Both allow you to issue commands to your Amiga by speaking them. The sampled words are then compared with ones held in memory, and the program passes the appropriate command to a Shell or program. For instance, you could program it to recognise the spoken word "dir" and to issue a DIR command. Alternatively, you could program it to recognise the phrase "what's on the disk, matey?" and then issue a DIR command. The Voice.library system puts all of this into a standard amiga library, so you can even build this into your own programs.

To be frank, my own experiments with this system were not overly successful. Although there is a certain amount of leeway built into the system, even a slight variation in the sample from the original means that it doesn't recognise the word This also means that you have to train it for every person you want to use the machine, as the same word spoken by two different people will be completely different as far as the computer is concerned. You also have to make sure that you stay calm, as angry words will just be spat straight back at you. It's also sensitive to background noise, so you can't have any Neil Young blasting out in the background while you are trying to use your Amiga. Unless you train it to respond to Neil Young songs, I suppose. ***Richard***

EXPANDING AN A1200

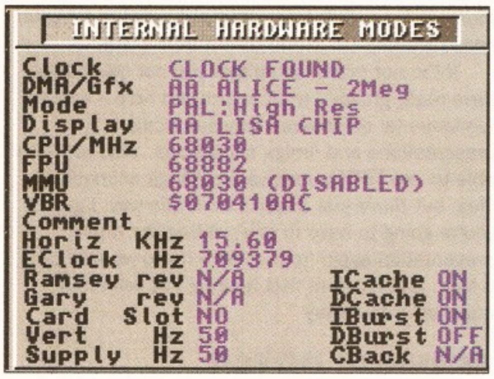
GENERAL

How easy is it to add extra memory to the new A1200? If I wanted to add memory in stages, what step sizes are possible, what Chips are required and at what cost?

Edward Langley
Wrexham

The easiest way to add extra memory is by fitting a RAM card to the trapdoor slot. A wide variety of cards are available; see the adverts in *Amiga Shopper* for more details.

Most of these cards will use SIMMS (Single Inb-line Memory Modules). These provide an easy and standard way of adding memory, and they can be easily fitted by anybody. These are available in many different sizes, but the most common are 1Mb and 4Mb. Most RAM expansions will allow you to fit two of these, giving either 2Mb or 8Mb. These types cannot be mixed, so if you want to expand beyond 2Mb, you will need to sell your 1Mb SIMMS. A 1Mb SIMM will typically cost about £40, while a 4Mb model will be around £130. ***Richard***



SysInfo can tell you lots of useful things about your Amiga, including whether it has an MMU.

INSTALLING IMAGINE & MMU

GENERAL

I have installed *Imagine 3.0* on my hard drive work partition (HD2), using the Installer program. However I cannot the program to load. When I click on the Icon after a short pause a requester pops up with the message "Unable to open your tool Imagine.INT"

Also I thought that the A4000/030 wasn't supposed to have a Memory Management Unit, yet when I run SysInfo or showconfig it says I have CPU 68030/68030 MMU. Do I have an MMU or does the program just think I have one?

Lee Martin
Keynsham

Imagine.INT is the main program file for *Imagine 3*, so it sounds like your installation has failed for some reason, leaving the program in a slightly mangled state. I would suggest that the best thing to do is to completely delete the "IM30" directory to which the program was installed and try installing the program again.

If it fails again, you should try altering the MaxTransfer rate of your Hard Disk. This can be done using HDToolbox which should have been supplied with your machine. It will probably be set to 0XFFFFFF, so try altering this to 0XFFFFF. As with all changes to your hard drive, you should make absolutely sure you have a full backup of

your disk before proceeding.

One invaluable tool for problems like this is SnoopDos. This will show you exactly which files your Amiga is trying to open, and whether it does so successfully or not. This is very good as error messages do not always tell you the full story. Sometimes a program will report an error with one file when it was in fact trying to open another.

ShowConfig does not differentiate between machines with or without an MMU (a special part of the CPU designed to help deal with memory and to control how programs access it) but Sysinfo usually seems to report it correctly.

Check the item headed MMU in the Internal Hardware box (shown above). On the A4000/030 I tested, this was designated as a 68030 (DISABLED), as you would expect from a machine fitted with a 680EC030 CPU. Some 4000/030s with full 68030 Chips (including MMU) were manufactured, but these were only supplied to developers, so I would be very surprised if you have one of these.

Some software can very easily get confused about whether an MMU is there, as it's not that easy to check whether one is present or not.
Richard

IDE LIKE A HARD DRIVE

HARDWARE

I would be grateful for your help. I have an A1200 with an external drive. I would like a hard drive. I would *really* like a hard drive, but my cash flow is a bit embarrassing at the moment. Then someone offered me not one but two hard drive, FREE! Oh joy! But (you were waiting for that bit, weren't you) the 2 drives in question are old IDE drives from IBM PCs with simple edge connectors, not the kind of thing that plugs into the A120. My questions are;

1 – Can I connect them to my A1200?
2 – How?
3 – Can I daisy chain them to connect both at once?

Both of the drives are BIG, so I'd have to rig up an external housing. Does this matter?

Dave Wilson
Sunderland

Unfortunately, you are going to have problems with this. From what you say about the drives it sounds as if they have the standard IDE connector for 3 1/2 inch disks, but this differs radically from the 2 1/2 inch drives fitted internally to the A1200. Some people have made connectors which allow you to plug a 3 1/2 inch drive into an A1200, but these require a half or third height drive and neither of the drives you have are small enough to fit inside the case, which brings in another problem.

Unlike SCSI interfacers, the internal IDE interface of the A1200 is not fully buffered, which means that you stand a very good chance of loosing some data if you use a cable longer than a couple of inches. Obviously data loss going either way would be a bad thing, giving at best unpredictable read-write errors and at worse a useless disk. Apart from this, you are definitely also going to need an external housing and power supply, as the A1200's supply is not capable of delivering the sort of power these drives are likely to need.

To be perfectly frank, I would say that it's not with the effort. The two drives only total 50Mb of space, and this would quickly be eaten up by applications such as *Imagine* or *Final Copy*. An external housing isn't going to be cheap, so I think you would be better off seeing if you could sell the two drives to an A4000 owner and investing the profits in a nice big 2 1/2 inch drive to fit inside your A1200. ***Richard*** AS

FILL IN AND GET US TO ANSWER YOUR QUESTIONS

If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please, also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. **If you have *several* questions in different fields that should be addressed to more than one of our experts, please send in your queries on *separate* forms.**

Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW.

Name: ______________________________

Address: ______________________________

____

____

Your machine:

A500 ☐ **A500 Plus** ☐ **A600** ☐ **A1000** ☐
A1200 ☐
A1500 ☐ **A2000** ☐ **A3000** ☐ **A4000** ☐

Approximate age of machine: ___

Kickstart version (displayed at the "insert Workbench" prompt)

1.2 ☐ **1.3** ☐ **2.x** ☐
3.x ☐

Workbench revision (written on the Workbench disk)

1.2 ☐ **1.3** ☐ **1.3.2** ☐ **2.04/2.05** ☐
2.1 ☐ **3.0** ☐

PCB revision (if known). Do not take your machine apart just to look for this! ____________

Total memory fitted (see AVAIL in Shell for Workbench 1.3) ________

Chip memory available (see AVAIL in Shell) ____________

Agnus chip (if known) ____________

Extra drive #1 (3.5in/5.25in) as DF__: Manufacturer ____________

Extra drive #2 (3.5in/5.25in) as DF__: Manufacturer ____________

Hard disk: ____Mb as DH__: Manufacturer ____________

Extra RAM fitted – type, size in Mb and manufacturer ____________

Details of any other hardware which could help us to answer your question:

____

____

____

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

____

____

____

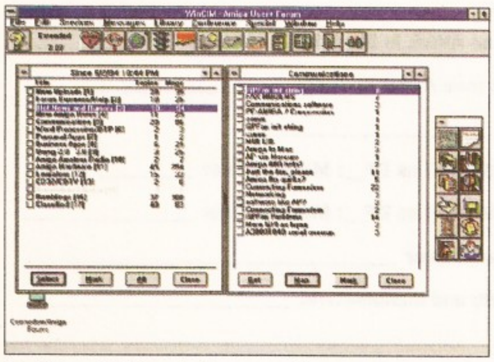
AS 41

Are you being Compuserved?

Dave Winder takes an in-depth look at one of the world's largest online information services, CompuServe. Why have more than two million people signed up with CompuServe? Read on and find out...

The CompuServe Information Service, also known as CompuServe or CIS (and sometimes by the less flattering "CompuSpend" and "CI$"), was shaped from a computer time-share scheme started in 1969 and was really "born" back in 1979. Based in Ohio, USA, CompuServe actually runs on a number of large mainframe computers. Boasting over two million members worldwide (somewhere around 45,000 of those are based in the UK), and offering access to over 2,000 online services, CIS really is onlinemongously huge.

It would be very unfair to call CompuServe a BBS, or even a Conference System for that matter. It is far more than either, or both added together. True, there are message areas, or forums as they are known on CompuServe. In fact there are more than 600 of them, and they cover just about every area of discussion you could want, including a very healthy collection of Amiga related forums – or should that be fora? (Fori – Ed). However, go beyond the forums and you see the electronic mail, the chat facilities, the online news services, the home shopping by modem, the travel information, financial services, reference databases, weather maps, and much more. Oh, and you get a free monthly glossy magazine as well!

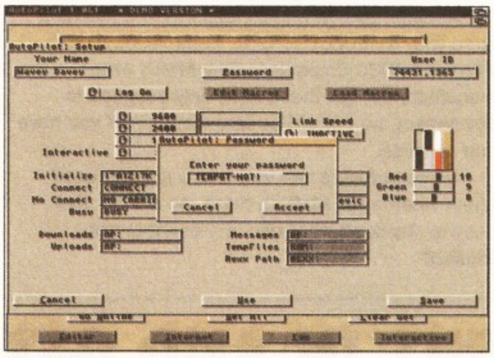


Putting a PC to good use, reading the Amiga Forums on CompuServe using WinCIM.

CIS ME QUICK!

Even though the Amiga forums are amongst the busiest on CompuServe, and there are many thousands of Amiga users online, and the Amiga offers simply the best graphical user interface there is, CIS doesn't support an Amiga front-end. If you use a Mac or a PC then you can get the CompuServe Information Manager in different flavours – for example, the excellent WinCIM for Windows users. CIM gives an easy to use, intuitive, point-and-click interface to CompuServe (although it isn't an offline reader but an online browser). Amiga users, if we were left to the mercy of CompuServe's management, would have to be happy with the rather clunky and distinctly un-intuitive text-based command line and menu combined front end.

Luckily Amiga users were not prepared to put up with this, and developed their very own Off Line Reader (OLR) for CIS. Originally going by the name of Whap!, this has now developed into a product called AutoPilot. Although not perfect (hey, what program is ever perfect?) it certainly makes using CompuServe a whole lot easier and cheaper.



AutoPilot is currently the only OLR for the Amiga on CIS. Colourful, isn't it?

At the moment another OLR for CompuServe is being written, and it looks like being one heck of a good program. I can't really say too much about it as it hasn't even reached Alpha Testing stage yet, but it will be worth looking out for I reckon.

However, using an OLR is all very well, but you still have to get online to get the program in the first place, and it won't be much good if you want to make use of the many online databases for example. So you will need to get online and get stuck in to that rather clunky interface I mentioned. To make your life much easier than mine was when I first logged on, I have put together the Wavey Davey Quickstart CompuServe Guide.

Things become a tad clearer when you

WILL IT COST ME THE EARTH?

Although CompuServe is an American service, you don't have to dial Stateside to connect. There are a number of access points in the UK, and connection surcharges vary according to which one you use.

	Peak Time 08.00 – 19.00 Mon – Fri	Non-Peak Time (All Other Times)
CompuServe Node	Free	US$ 7.70 per hour
GNS Dialplus	US$ 4.20 per hour	US$ 7.70 per hour
Mercury 5000	US$ 4.20 per hour	US$ 7.70 per hour

On top of the connection surcharge, you also have to pay a monthly membership fee which depends on which "pricing plan" you opt to use.

STANDARD PRICING PLAN

This includes unlimited connect time, with access to a wide range of basic services, for a monthly fee of US$ 8.95. Services not covered by the standard pricing plan attract connect charges (you can tell which ones these are as they are marked with either + or US$ next to the menu choice. Those marked + are Extended Services, US$ are Premium Services). These Extended and Premium Services attract a connect charge that varies according to the speed of your connection!

300 baud connection	US$ 4.80 per hour
2400 baud connection	US$ 4.80 per hour
14400 baud connection	US$ 9.60 per hour

ALTERNATIVE PRICING PLAN

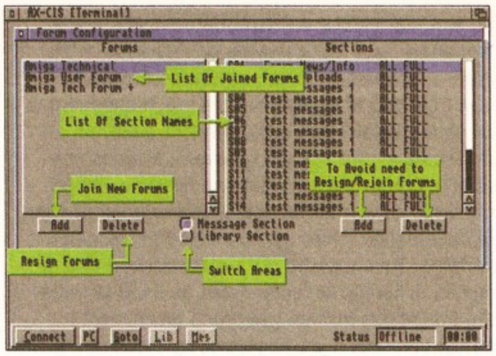
This reduces the monthly fee to USUS$ 2.50, but means that all services incur connect charges at a rate of:

300 baud connection	US$ 6.30 per hour
2400 baud connection	US$ 12.80 per hour
14400 baud connection	US$ 22.80 per hour

EXECUTIVE SERVICE OPTION

The Executive Service Option option offers access to exclusive databases, the news gathering service, and a ten per cent discount on CompuServe purchases.

This option is very good value as it includes the Standard Pricing Plan membership fee in its monthly charge of US$ 10.00.



Ax-Cis is due for release around Christmas time. I have a feeling it is going to be worth waiting for.

understand the basics of information access, CompuServe style. There are two methods of cruising CIS. The first, and easiest, way is to make use of the menu system. The main CompuServe menu is known as the "TOP" menu, and from here you can branch through a myriad of submenus, each taking you deeper and deeper into CompuServe. Whilst this method is really quite simple to grasp, it is also quite time consuming as you might need to wade through four or five menu structures to arrive at the part of the service you want. Wavey's golden rule of comms is "time is money", so if you know where you want to go avoid using the menus and opt for the much speedier command line method of access.

The "GO" command allows you to specify where you want to go, and get there directly without the need for all those menus. Go commands are used with either quick reference keywords or page numbers. Although this may be a bit complicated, it is certainly fast and efficient. The thing to remember is to jot down the page numbers and keywords associated with the areas you visit most, keep them handy and you will have no trouble in getting where you want to be. For example, to swiftly pop into the Amiga Tech Forum, you would simply type "GO AMIGATECH".

There are some other commands which can be executed from the CompuServe command line, the most common (along with any abbreviations that may be used) are as follows:



Turned out nice again, hasn't it?

WHAT NOW CAPTAIN COMPUSERVE?

OK, so now you know what it is and how to use it, the next question is what to do when you are there! Well, the first place I would recommend you visit is the PRACTICE FORUM. Type "GO PRACTICE" to get there, and then you can learn how to navigate the system and use the commands without having to pay hourly connect charges. Yep, the practice forum is free.

Once you've had a good fiddle around, you might want to take a look at the Email services, and you can get here by typing "GO MAIL". If you want to practice sending Email, why not pop something through my letterbox? You can contact me on CompuServe as 74431,1365 (catchy huh?) or why not try sending me a message via the Internet mail gateway to **dwindera@cix.compulink.co.uk** by just following the instructions you get online? There is an electronic address book, a facility to compose your mail messages offline and then upload them as a file, Internet mail, as well as connectivity to such systems as MCI Mail, SprintMail, Telex, and Fax.

If you are in a talkative mood, you could go to the CB Simulator by typing "GO CB". This is the CompuServe chat facility, and operates along the lines of Citizens Band Radio, with a computer instead of a radio of course. It can be very addictive, so be warned that addiction could cost you lots of money in connect time!

I've touched on the subject of Forums already, but it won't hurt to go into a bit more detail. CompuServe Forums are message areas or conferences, each dealing with a specified topic of interest. Once you have joined a Forum you can take part in discussions with other Forum members, download files, even take part in "live" conferences featuring key speakers every now and then. Many companies use CompuServe Forums to offer technical support to their customers. Of particular interest to *Amiga Shopper* readers will be the various Amiga related Forums. Try the following for starters:

GO AMIGAARTS – (Amiga Arts Forum)
GO AMIGAFF – (Amiga File Finder)
GO AMIGATECH – (Amiga Tech Forum)
GO AMIGAUSER – (Amiga User's Forum)
GO AMIGAVENDOR – (Amiga Vendor Forum)

THE INFORMATION SUPERBUYWAY

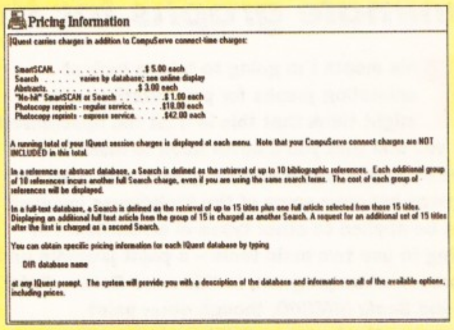
There are some very impressive information search and retrieval services available via CompuServe. However, many of these cost a fair amount of money to use. In effect, CompuServe acts as a gateway to these services – you end up connected to a massive database where you can search for information that matches your needs, and then retrieve that information in the form of a file. Perhaps the most impressive of these is IQuest. For me this is where CompuServe truly excels, as an online reference library. IQuest is awesome, simple as that. It offers more than 900 bibliographic and full text databases, with information derived from all kinds of publications. Whilst you may well barf at the idea of spending US$20 on ten minutes of information retrieval, if you need the data for work purposes it can be a lot cheaper than travelling to a large reference library and spending hours searching through books for it, only to then have to spend even more hours copying all the references, or paying for photocopies. Doesn't sound so extravagant any more, does it? If you want to try it out, "GO IQUEST" will get you there, and don't worry, you can read all about it, and how much it will cost, before you make the decision to connect and start paying!

NEWS AT ELEVEN!

Or any time you want it, using the CompuServe news services. Although CIS is a USA based system, and therefore has large Stateside bias, it does take into account the number of UK users. There is a UK News Service providing bang up to date news reports as they happen. I have quite often seen major news stories reported here before they reach the radio or TV. Associated Press Online gives a more international flavour to the news, if you want the broader view. If you are an Executive Service Option member of CIS you can even specify topics that are of interest to you and any news item that matches that specification will be clipped and added to a folder for you to read at your leisure. Oh, and what always comes after the news? Yep, the weather. CompuServe is no different, and you can download pretty weather maps for just about any region in the world, as well as detailed weather reports and forecasts.

IQUEST CHARGES

IQuest carries a surcharge over and above the normal connect charges for CompuServe. This is because it is a third party that is offering the service rather than CompuServe itself. The charges vary according to how you use IQuest, but this screenshot from CompuServe itself should give you a rough idea.



Pricing Information

IQuest carries charges in addition to CompuServe connect-time charges:

SmartSCAN. . . . .$ 5.00 each
Search . . . . . . varies by database; see online display
Abstracts. . . . .$ 3.00 each
"No-hit" SmartSCAN or Search . . . .$ 1.00 each
Photocopy reprints - regular service. . . . .$10.00 each
Photocopy reprints - express service. . . . .$42.00 each

A running total of your IQuest session charges is displayed at each menu. Note that your CompuServe connect charges are NOT INCLUDED in this total.

In a reference or abstract database, a Search is defined as the retrieval of up to 10 bibliographic references. Each additional group of 10 references incurs another full Search charge, even if you are using the same search terms. The cost of each group of references will be displayed.

In a full-text database, a Search is defined as the retrieval of up to 15 titles plus one full article selected from those 15 titles. Displaying an additional full text article from the group of 15 is charged as another Search. A request for an additional set of 15 titles after the last is charged as a second Search.

You can obtain specific pricing information for each IQuest database by typing

DIR database name

at any IQuest prompt. The system will provide you with a description of the database and information on all of the available options, including prices.

Counting the cost of information search and retrieval, CompuServe style.

GAME FOR ANYTHING?

There are a number of interactive games available to play whilst online, perhaps the most intriguing of these is "You Guessed It!" which is a TV gameshow-style game. You can win real prizes by answering the questions set by "Bob Illuminati". It's real time, multi-player, and you need a degree of skill to get anywhere. Just type "GO YGI" to get there. Of course, there are also the usual run of card games, board games, even a very pathetic hangman.

IN CONCLUSION

I have only managed to skim the surface of a truly amazing, truly useful, and truly enormous system in these few words. I haven't really gone into the home shopping services, extensive travel services, film reviews, financial services etc etc etc. Heck, there is just so much there. If it is information that you are after, all wrapped up in an easy-to-access parcel, then CompuServe is for you. Give them a call and ask what special offers they have running – you could get CompuConnected for a lot less than you may imagine! AS

COMPUSERVE CONTACT

For more information about CompuServe contact:
CompuServe Information Service (UK)
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PO Box 676
Bristol BS99 1YN
☎ 0800 289378

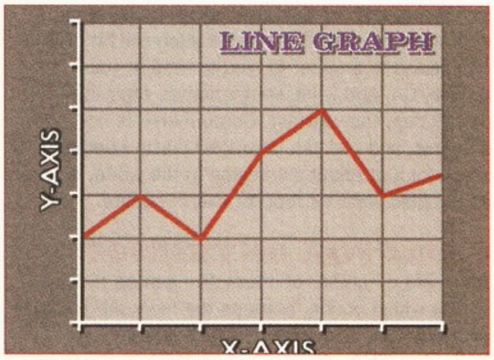
GRAPHOLOGY

You too can make your presentations look great – Gary Whiteley shows you how to animate graphs for that professional look.

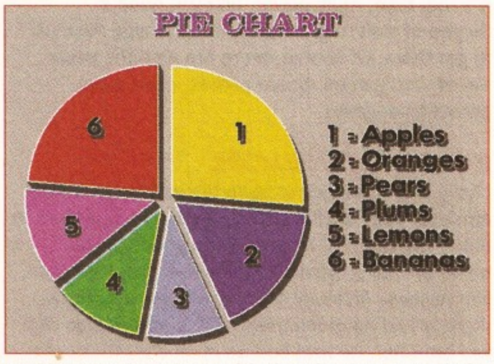
This month I'm going to take a look at animating graphs for presentations. You might think that this is a bit too specialised for you and that you'll never need to make any presentations which include graphs, but read on anyway because some of the techniques involved can be applied to other types of animation. I'm going to use two main tools – a paint program and a presentation program, in this case *Deluxe Paint IV* and *Scala MM300*, though other paint programs (for instance *Brilliance*) and other multimedia software (eg *MediaPoint* or *Adorage*) could be used instead, though with a few slight modifications to the method.

POINTS TO CONSIDER

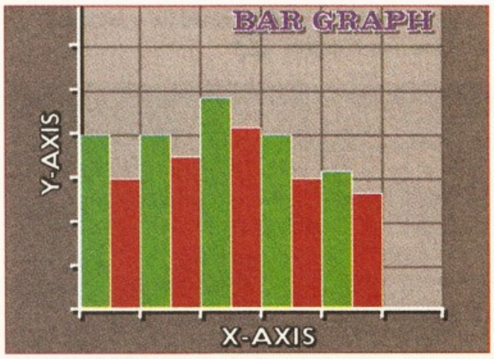
As with most computerised presentation work the first rule is KISS – Keep It Simple, Stupid. Why? Because getting the viewer to quickly understand what is being shown to them can prove difficult if too much information is crammed on to one screen. The idea of a presentation is to provide easily absorbed, at-a-glance details which can later be backed up by an information pack, brochure etc and there's no need to go over the top when designing the actual screens which will be shown. Keep the colours clear and simple. Use backdrops which enhance the presentation, not swamp it. If you can't see the wood for the trees, the purpose of the presentation will be lost. Use fonts which are both easy to read and which reflect the style of the presentation you are making. Don't use cyberpunk fonts when dealing with a blue chip company (unless they approve and the fonts fit the context). Use fonts which will be easily readable from the desired viewing distance – which generally means using point sizes of 18 or more on a hi-res interlace screen. Bigger fonts are better in most cases, though it will depend on what colour the text is and how it works against the background. Do use a background if you can, because a plain screen just doesn't have the pizzazz offered by a nice-looking *Scala* background, for example. A carefully-chosen background should set off the foreground material – in this case our graphs – so it should be interesting, yet not overbearing. Dark hues will probably work best because they allow us to produce the graph (which is the main information pertinent to the presentation) in lighter hues which will be easily and quickly digestible.



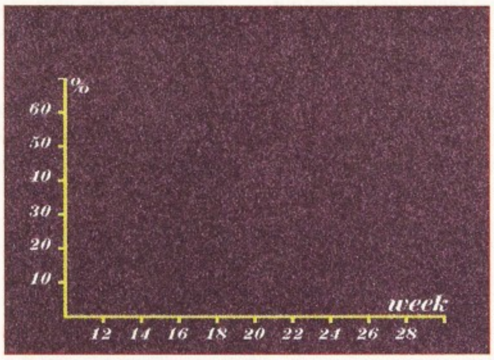
There are many types of graph, though the line



and bar graphs, along with the pie chart and their



variations are probably the most common.



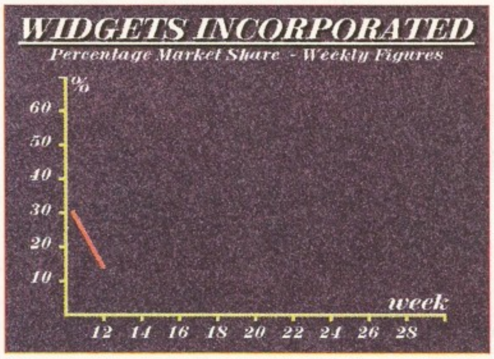
Start by constructing the graph's axes, allowing room for any text that will be required – labels, titles, logos etc.

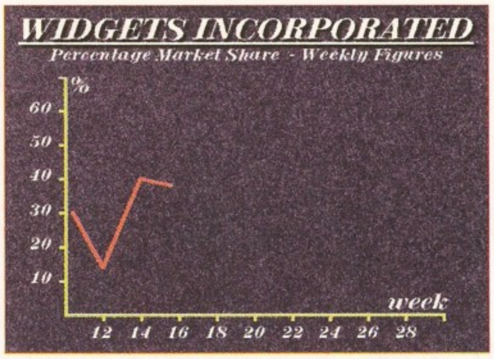
DESIGNING THE GRAPH

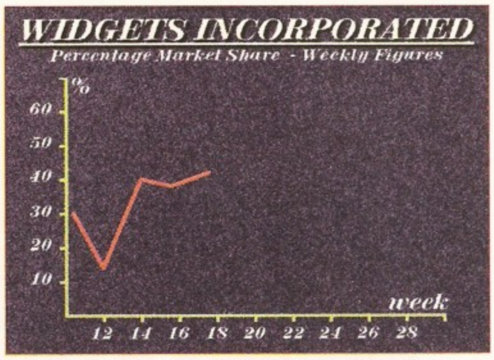
The first thing you need to do is to sit down and analyse exactly what it is that your graph animation has to achieve. It is likely that it will be part of a larger multimedia presentation and, if this is the case, it should be designed with the overall style of the presentation in mind. Unification and 'corporate identity' is important. Stick to a few particular fonts and graphical styles to ensure that each part of the presentation has at least some visual linkage to its preceding and following segments. Don't chop and change the way that each screen is presented and laid out too radically, unless you are moving into a completely new chunk of the presentation, or you may well confuse your audience instead of informing them. Look at the type of data that you are going to present and decide what kind of graph to use. Will a bar chart, pie chart, scatter chart or line graph work best? How much data will fit on to one screen (but remember not to overcrowd it). Ensure that each graph is annotated with a title and name, and that the axes or segments of the graph are clearly labelled, otherwise the viewer won't be able to grasp what the graph's content is all about. If you can't fit all the data easily on to one screen, consider using several screens one after another, and work out just how you will get from one screen to the next with the least amount of disturbance – through some kind of transition perhaps. This is where our presentation program comes in handy, because it can be used to make the transitions between sections much more straightforward. If you're just using a paint program the likelihood is that you'll just combine the animations one after another with maybe a momentary cut to a background in between. With a presentation program like *Scala MM* there is much more scope for being creative and hence providing more variety for the viewer to keep their interest up. Perhaps the best way to visualise how the data will be presented is to do some rough sketches before you start committing the artwork to your Amiga. Imagine how the data will look on screen. What scales will you use for the axes (if any), and what kind of graphic presentation will be most easily understood by the viewer?

GETTING TO WORK

I'm going to make two kinds of graph – a line graph with several sets of data and a bar graph with just one set. If you watch the main news programmes on TV, you'll often see these kinds of graph (or variations of them) when elections are held, or there have been some new unemployment or economic figures released. I say variations (such as bar graphs built of coins) because TV stations use some very sophisticated software and equipment to get their presentations on to screen. However, one night, as I was watching *News At Ten*, I realised that I too could do at least some of these effects quite easily on my Amiga, even if I couldn't exactly match the high-quality graphics that British TV generally seems to excel at. Accordingly, I knocked up some quick screens in *DPaint*, loaded them into *Scala MM300* and set up a couple of transitions. Voila! – a line graph sequence which draws itself on to screen and is far more interesting to look at than one which just sits there doing nothing. So how do we go about making such things? First decide on the background you are going to use. You could produce this yourself or use an existing one. Just ensure that it is fairly unobtrusive (whilst still being interesting), uses dark hues and, if you have a non-AGA Amiga, is composed of no more than eight colours – you'll need the rest for the graph and text. It should also be hires interlace format and, if possible, in overscan. Load the image into your paint program so that you have the correct palette to work with and then flip to the spare screen so that you can get to work. If necessary clear the spare screen to palette colour 0. A note of caution to *Scala HVT* users: *HVT* can only use eight colours, so it will probably be better to sacrifice the background altogether as otherwise you almost certainly won't have enough colours to produce the graph, text *and*



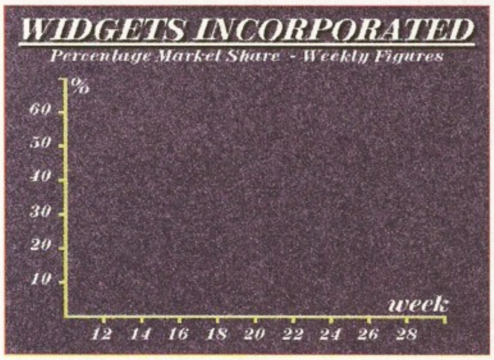




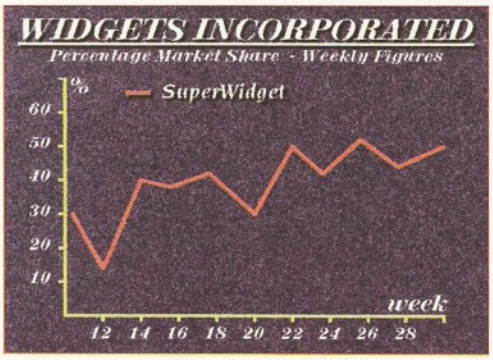
Animating a graph with a paint program is much more time-consuming, as each frame of the animation has to be prepared by hand – but it is possible. Here are just four frames from a ten frame sequence. Save the resulting sequence as an animation and then play it back to check that the graph builds up correctly. Then go to the first frame, swap screens, load the background image you chose at the start, swap back and merge the background behind all the animation frames. Check the playback once more and save the completed animation.

a background. But feel free to experiment anyway. Why use hires interlace overscan? Because it looks crisper and it will fill the screen, whether it is output to video or displayed directly to a monitor. If you use a non-AGA Amiga, don't worry that you can only use 16 colours maximum, because that's usually plenty for most jobs like this. We're going to make a line graph which shows the percentage of two products' market share over a period of weeks. Start by drawing the axes. Y (the vertical axis) will represent the percentage, whilst X will chart the week by week progress. I know from examining my raw data that the maximum Y figure will be 60 per cent, whilst the minimum will be 0 per cent, so (bearing in mind that we want to title and name the graph and have room to label the axes) set up a 10x10 grid to make it easier to accurately draw straight lines and align the labels correctly.

A slight repositioning of the whole graph framework might be necessary to get the right visual balance, so pick everything up as a brush and place it where it looks best, remembering to leave enough room for the title and name, as well as any company or other logo which might be required. Then add the title and name text. Stand back from the computer screen and make sure that all the text is easily readable. If you're going to export the graph into a presentation program (*Scala MM*, for instance) you might find it easier to save the blank graph and then load it up in that program and add all the text there, because it will be easier to do fancy things like shadows, underlines and so on. When you've finished laying out the basic framework save the whole image as an IFF file and load it back to *DPaint* (if you've been adding the text elsewhere).



Draw in the data for the two sets of figures by using the line tool (making sure that the grid function of your paint program is active). Don't forget to add a key so that the viewer understands what each line represents.



Now we're ready to start drawing in the actual data. Because I have two sets of data to represent on the graph I'm going to use two separate screens – one for the first set of data and the next showing both sets. Make sure the grid is active in *DPaint* and select the line tool and a large square brush. Draw the first set of data (make some up if you don't have any handy!) on to the annotated graph in a distinctive colour, making sure that it corresponds with the intersections of the two axes properly. Then add a short description to denote what the line represents and save the new screen with a new name. Next add the second set of data (in another colour), add a new description for it and once again save the image with a new name. We now have our two basic graphs, both without backgrounds.

What we do next depends on the method we will use to animate the graphs. The simplest method is to use a left-right wipe in a presentation program like *Scala* to progressively wipe between our three screens – the 'blank' graph, then the first set of data, followed by the second. If this is your preferred method then we must first return to *DPaint* and add our chosen background to each of the graph screens by loading it into the spare page, swapping back to the graph image and choosing the 'merge in back' command, saving each new page under its original name as it is created. If not, we'll come to animating the graphs with our paint program a little later. Next run *Scala MM* and load the graph screens in sequence. Set up the left-right wipe transition (called Wipe East) for each image and run the script, using the mouse to advance the presentation to the next screen as required. You should see each set of data appear as if it is being drawn across the screen. and there you have it! Experiment with other transitions if you like to see what other effects can work successfully with your graphs. If you don't have *Scala MM* then life is rather more difficult. The simplest (and least elegant solution) is to simply make a *DPaint* animation which flips from one graph screen to the next and activate it manually. But this combination won't look too flash. A more elegant, but much more drawn out and memory-hogging method, would be to make each line of the graph draw itself on to screen in sections, using a technique called Scratchback. Scratchback involves modifying a single completed image to make a series of frames, each with progressively less of the image shown in each frame. The easiest way to do this is to determine how many frames of animation it will take to do the graph sequence, based on the number of data points that your graph consists of – plus an extra frame for the initial blank graph. To do the scratchback load the final frame of the sequence (the one where the graph is complete), set the number of animation frames required and then go to the last but one frame. Remove the last portion of the graph line (the section which is furthest to the right), then go back another frame, remove the last two portions and so on, until you reach the first screen, which should have no graph line on it at all when you've finished. If you have more than one data line to draw you'll have to add this sequence after the first section is complete and repeat the procedure described above to animate it. That's it! Without a presentation program it's obviously much harder to make an animated graph, but it *is* possible.



Now you've learnt how to do a line graph, try your hand at doing a bar graph similar to this one.

Now it's your turn. Try animating a bar graph (here's a tip if you use *Scala MM300* – draw the bars using the rectangle tool and then use individual bottom to top wipes to make each one appear to grow). Work out different ways of getting the result you require within the limits of your particular Amiga hardware and software, though bear in mind that some things may well not be possible if you don't have the right setup. Watch for graphs on TV and try to emulate them with your Amiga. As I said at the start, graphs may not be your thing, but the experience you gain from animating them will come in useful for other projects you may be called upon to do. AS

AMIGA FORMAT

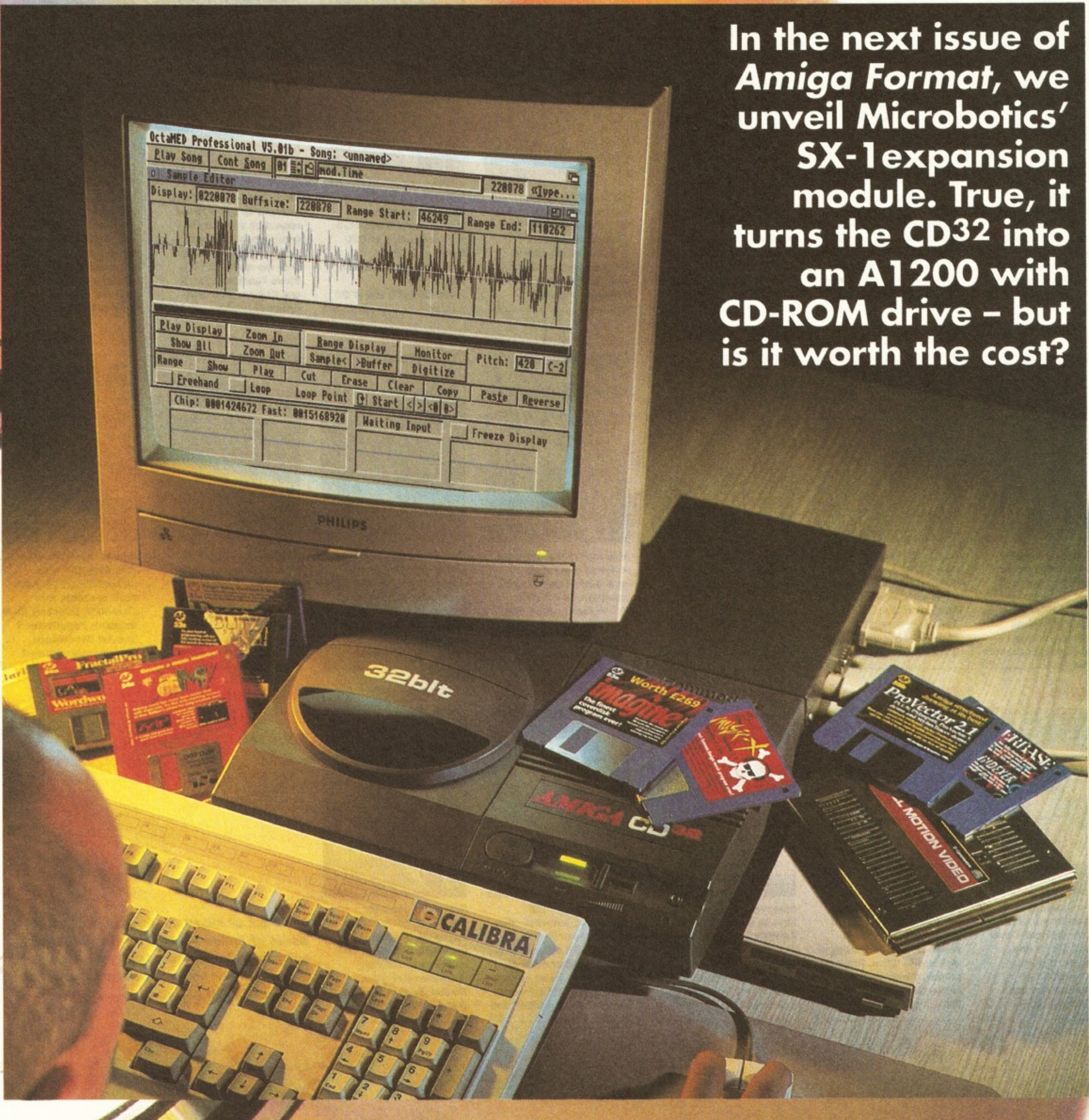
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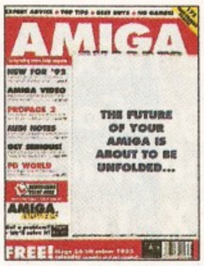
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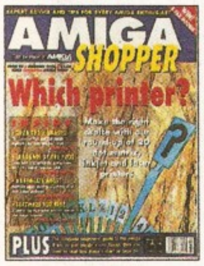
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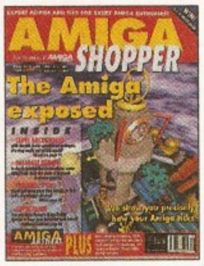
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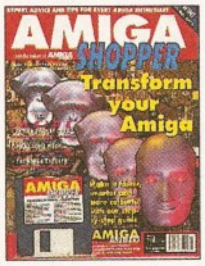
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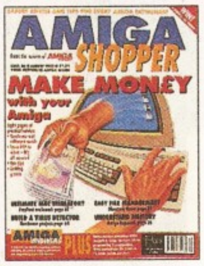
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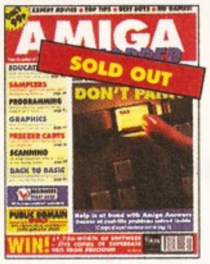
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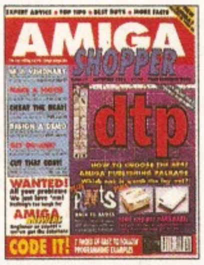
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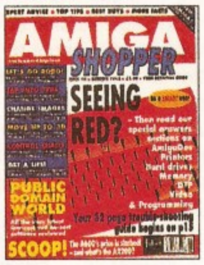
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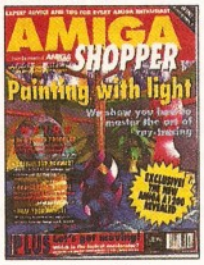
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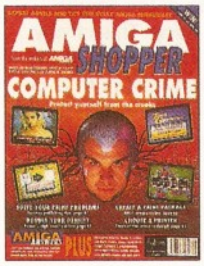
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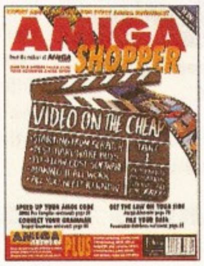
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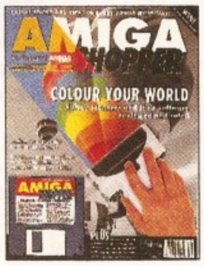
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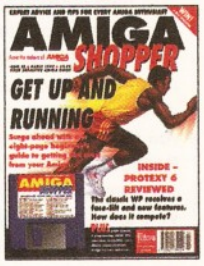
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POWERFUL PIPES

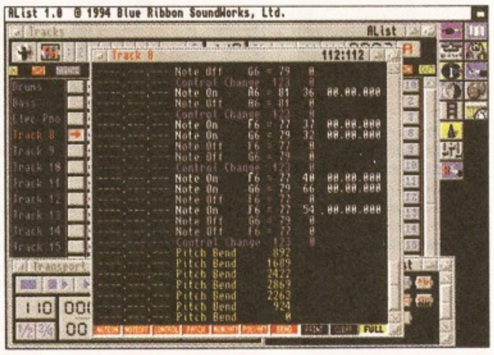
It's upgrade time again, as Bars and Pipes gets a newer, more powerful version. But is it worth the cash? Tim Tucker investigates.

Of all the truly powerful sequencers on the Amiga, *Bars and Pipes* is certainly the most comprehensive. There are more features packed into this software than any other sequencer anywhere, and there is no other music program available which takes advantage of the Amiga's architecture so well. This is especially true of the multi-media side of the program, which has been astoundingly well catered for already in previous versions. It seems strange then, that there should be yet another upgrade on the way. How could they possibly fit more into the software than is already present? Well obviously the Blue Ribbon Soundworks have seen a few omissions, because here it is, version 2.5. It's available as an upgrade to existing owners for just under seventy quid, and requires a hungry 2Mb of RAM to run, which should indicate the amount of power available. But are the new additions worth this princely sum, or are *Bars and Pipes* owners already well catered for, thank you very much?

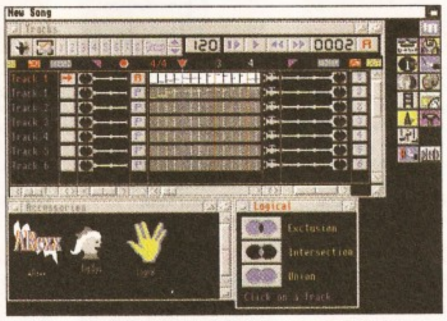
Before getting into the specific tools and accessories that the new version offers, let's just take a look at the enhancements to the existing features. The first is an addition to the Song Construction window, which enables you to loop any defined sections of your song by a set amount, before going on to the next section. For example, if your third section, called Verse, needs repeating twice before going on to the Chorus, you can stipulate a repeat time of 2, instead of copying the section twice just after the first one. This is not only a bit of a time saver, but it also tidies up the song construction window a little by dispensing with the need to stack the same section one after the other.

Even better, you can actually record other tracks over the loops; for example, if you have a four bar groove looping four times, you can create an independent 16 bar track which plays over the whole thing. This is designated a Linear track, which is not to be confused with a Real Time track. The difference is that a Linear track is effected by tempo changes, whereas a Real Time track isn't.

Most of the other changes to the existing program are designed to make your life easier when working with the sequencer. Entering SMPTE times and Song times is now facilitated by special key presses, such as up-cursor to increase the number field sequentially, and Delete to set the time to zero. You can now alphabetise Tools in the Toolbox, which makes finding the right Tool a lot easier. And, if you're using the Workbench 2.0 double-width and double-height screen options, there is a new feature which enables you to move into any quarter of the screen without having to scroll all the time. Simply pressing Alt and one of the cursor arrows takes you directly to the part of the screen you want, and always puts the palette in the area of the screen you're using. This is very handy – with so many different windows to fit on the screen while using *Bars and Pipes* Pro, I've found the extra screen size very useful.



Analyse your MIDI input with the AList tool. Handy for sorting out problems that may occur.



Logic has an amusing Spock greeting logo, but is of limited value as a tool.

MAKING TRACKS

There are some handy new menu commands for the Track window which are worth a mention. You can now merge several tracks together into one track with a single menu command, and also split different pitches from one Track, each into a Track of their own, which is most useful if you want to split a drum Track into its constituent parts. You can also now copy a Tool from one Track to every Track in a Song or Group, which is a good time

TOOL ODDITIES

There's a group of, shall we say, more esoteric Tools provided by this release. Here's a sample:

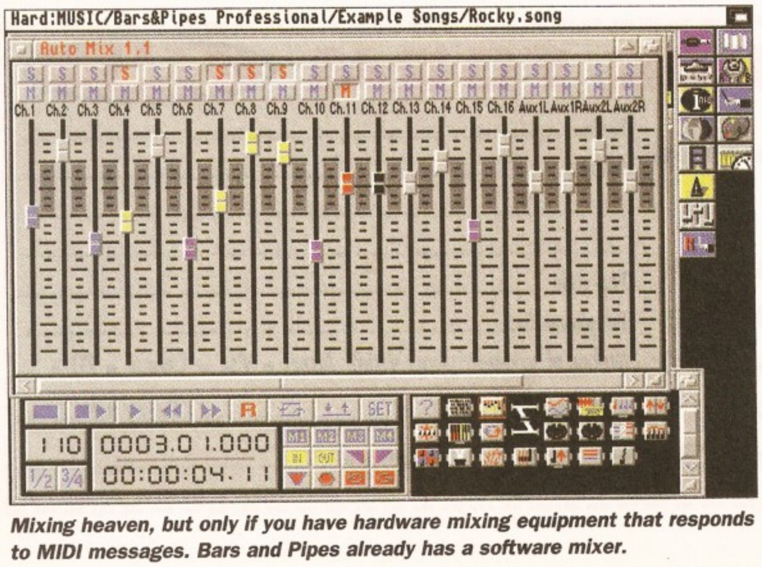
Controller Invert – this inverts the value of any MIDI Control Change message. Useful with Mix Maestro for synchronising fade-ins on one track with fade-outs on another.

Quanteeze – create odd time music with this utility. It enables you to quantise to any clock pulse you want, instead of just to preset note durations, allowing any kind of timing quantise you desire, such as quintuplets or septuplets.

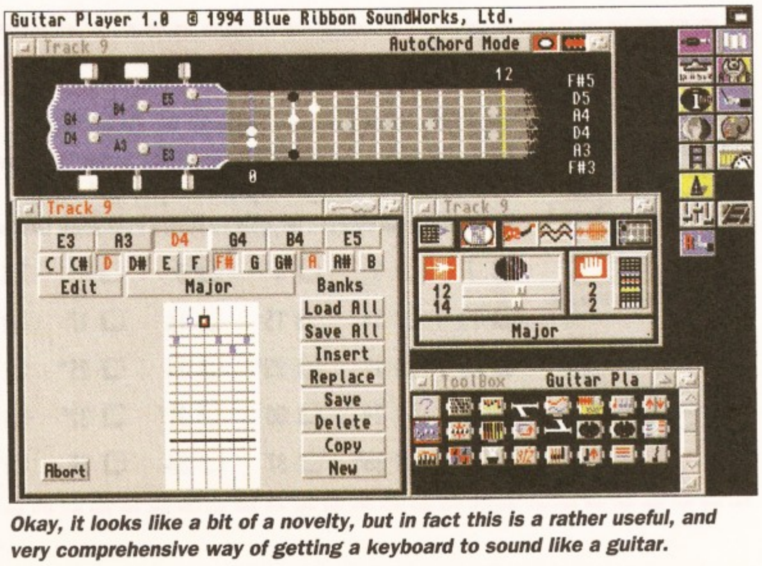
RandoNote – randomises pitches in a Track. I'm not sure what you'd want this for, but it's there.

VelDur – the weirdest Tool yet, this changes the duration of a note according to its velocity. Hit the key harder, and it lasts longer. Someone somewhere may use it, but probably just once.

Link – Sometimes tracks lose note off commands, especially after a quantise procedure. Link restores note off events to every note on, which should iron out this problem should you come across it.



Mixing heaven, but only if you have hardware mixing equipment that responds to MIDI messages. Bars and Pipes already has a software mixer.



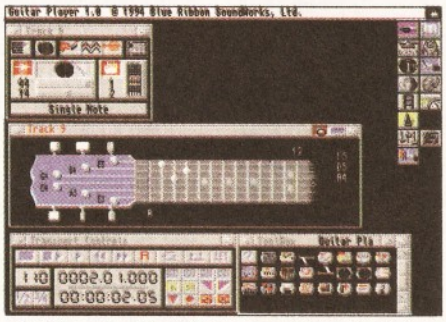
Okay, it looks like a bit of a novelty, but in fact this is a rather useful, and very comprehensive way of getting a keyboard to sound like a guitar.

saver when you want to always Quantise everything to sixteenth notes, for instance.

Editing is made less fiddly due to the fact that you no longer have to update the graphic window to hear your edits playing from the Transport controls, but you can still easily revert to the original track with a single menu command. You can also cancel dragging and wanding operations by pressing the right mouse button before you let go of the left mouse button. Step Entry has been improved by the introduction of a simple command using the Space Bar of the Amiga keyboard, which lengthens the note you're set to. For example, if you've set Step Entry to eight notes, and you want to create a quarter note, simply hold down the note and press the Space Bar – it couldn't be easier.

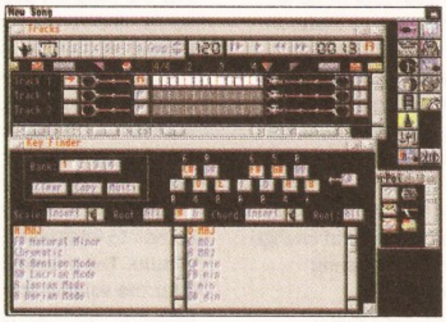
A BUNCH OF NEW TOOLS

There are a bunch of new tools available with this release, some of which may prove very useful to many users. To start at the bottom of the alphabet, there's AList, a fairly rudimentary utility which nonetheless could help solve many a MIDI nightmare. AList is placed in the Pipeline, and provides a window within which is listed all the MIDI events (apart form System Exclusive) that pass through it. This is very useful for diagnosing any problems you're having with your equipment, and for making sure that all your information is reliably getting to and from the Track that it resides in. If you find the display is a little crowded, you can always filter out the MIDI data you don't want to view, and you can also print the whole thing out to have a good look at what's going on.



What's great about Bars and Pipes is that you can arrange the windows to your liking.

Next up is the highly specialised Auto_Mix. This is nothing to do with Mix Maestro, the built-in MIDI mixer that is already packaged with *Bars and Pipes*. Auto Mix is more geared to controlling external hardware mixing desks that respond to MIDI, and automating their control. Each slider sends out Control Change messages that you can define yourself. You can create up to ten groups, so that when you move one of the sliders in a Group, the others either move by the same amount, or all move to the same level, and even crossfade, so that moving a slider one way causes all the other sliders in the group to move in the opposite direction. Auto Mix also provides Mute and Solo buttons, which can also be grouped together.



You need no longer shout "what key are we in?" to the guitarist. Unless you want to.

Moving on, we come to Drum Key, a rather snazzy little Tool that enables you to play the drum section of your sequencer or drum machine, and even the instrument section if you wish, from the comfort of your Amiga keyboard. Basically you can assign MIDI note values to different keys on the keyboard, and plonk away without having to stand up and wander over to your musical instrument. While this is fun for working out ideas, its use is limited by the fact that you can't actually record any of your doodling from the Amiga keyboard, so when it's time to get it down you're going to have to take that trip over to the ivories as usual.

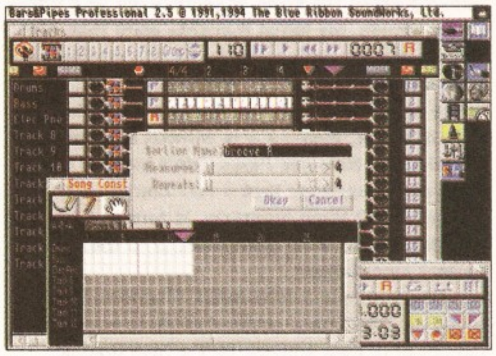
AIR GUITAR THE IMPRESSIVE WAY

Perhaps the most impressive new Tool is Guitar. This comes close to being a program in its own right, by providing you with a way of voicing chords the way a guitarist would do it on his instrument, and affecting the way the notes are played to emulate a guitarist's strum. You can choose to trigger chords from just one note on the keyboard, or play chords as you would normally play them and have them re-voiced to a typical guitar inversion by the Tool itself. This is a fantastic idea, which really adds to the authenticity of a guitar part. You can choose to have the notes emulating a guitarist strumming up, down, or both, and you can also determine how slow or quick the strumming is played. You can also play the notes with the mouse on a diagram of a guitar fingerboard, and create pitch bends and vibrato by small mouse movements. The number of times I've had to do all this manually in the past, by working out the voicings and playing them tortuously in by hand, makes me wish that this feature had been provided long ago, and anyone who uses a lot of guitar parts in their music should welcome this highly comprehensive Tool.

For those who have a limited knowledge of musical theory, the Key Finder Tool could come in very handy. It basically analyses your performance and tells you what scales and chords you can play with the notes you've recorded. Say for example you had a cracking melody, but you weren't sure how to harmonise it. All you need do is record the notes to a track, then use Key Finder to provide a list of compatible chords and scale notes. The Tool provides every single possibility that it knows of, so you're given plenty of choices to play around with. You can insert the resulting scales and chords into your Master Parameters too, which can then be used to create compatible auto accompaniments and counterpoints by other tools. It is this sort of integration that makes *Bars and Pipes* such a powerful program, with so many different ways of getting music out, no matter what your ability.

The Legato Tool is a straightforward feature that creates smooth, legato notes (notes that run into each other, such as a sweeping violin part) from shorter ones. The only parameter in this Tool is the Overlap Percentage control, with which you can determine how far each note strays into the next note. Not the most exciting utility, but it could prove handy. And finally, there's Logic, which acts on two tracks in the program. You can remove notes in the second track that are identical to ones in the first track, remove notes in the second track that are *not* identical to the first one, and merge notes from the first track into the second track if they're not already there. This Tool seems to be mainly useful in conjunction with the Counterpoint Tool, as it enables you, by a two step process, to create a counterpoint independently in a separate track. For this reason, it would have been better to update the Counterpoint Tool with this feature than create a new Tool to tidy up after it, as in its own right it has very little use at all.

WHAT
***Bars and Pipes* Pro 2.5 – £299.95**
Upgrade – £69.95
WHO
Meridian Software
WHERE
Meridian Software
East House, East Road Trading Estate, London, SW19 1AH
☎ 081 543 3500



Looping in the Song Constructing window makes life easier, but hardly breaks new ground.

SO, IN SUMMARY...

This release provides little of real value to the dedicated *Bars and Pipes* user. The enhancements to the existing features make life easier, but hardly break new ground. As for the Tools, most of them are of highly specialised use, and it should be easy to tell whether you need them or not. I'd give the Guitar and Key Finder Tools the benefit of further investigation, while the others are more likely to sit idly by with the hundreds of other features of *Bars and Pipes* that I never use. If any of these features are just what you've been waiting for then go for it, but otherwise, wait until a more significant upgrade arrives from the boys at Blue Ribbon. AS

CHECKOUT
BARS & PIPES PRO 2.5

Features 90%
As an overall package, Bars and Pipes is still the one to beat for features.

Ease of Use 69%
Not a program you can get the most out of without the huge manual sitting by your side at all times.

Documentation 81%
Very comprehensive manual, and a good index helps you to find the bits you need.

Value for Money 85%
For many, it will be worth every penny, but if you just want to record straightforward MIDI tracks, look for a cheaper option.

Overall Rating 83%

DREAM SEQUENCE

It's often been said that Tim Tucker lives in a dream world, but let him indulge in a fantasy for a while as he conjures up... the ultimate sequencer for the Amiga.

The recent release of the improved *Music-X* (Version 2, reviewed in issue 39), and this month's *Bars and Pipes* upgrade, set me thinking about the state of sequencing as a whole on the Amiga. My initial thoughts were that, since 1987 when the Amiga first burst into my life, very little has changed on the sequencing front. Back in the early days, Dr T's *KCS* was a lot darker than it is now, *Music-X* was without a scoring module, and *Bars and Pipes* didn't have all the multi-media baggage that it now carries, but essentially all three programs, in terms of creating music, were pretty similar to their current incarnations.

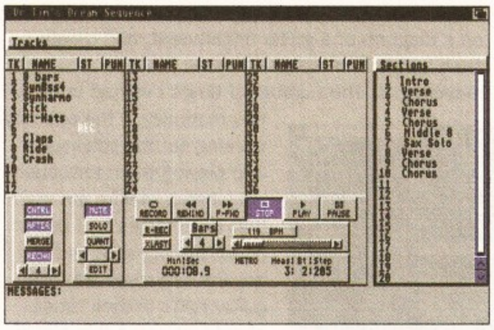
Alright, this is a little unfair. Amendments to all these programs have enabled users to further tap the power of their Amigas; Dr T's Tiger graphic editor was a welcome addition to *KCS* for musicians who wanted to make editing less of a numbers game, and the more computer literate music makers have been given the opportunity to create some awesome ideas with the Programmable Variations Generator. *Music-X's* expanded sample support builds on an already formidable integration of MIDI and digital sound files, and *Bars and Pipes* has become the multi-media musician's dream come true. But my contention is that the bare nuts and bolts of recording MIDI data to your Amiga has remained largely the same.

I have referred to these three programs because they represent the very best that the Amiga currently offers in sequencing software, and are also by far the most commonly used amongst the Amiga music fraternity. What I'd like to suggest, however, is that the sequencer as a recording tool should be re-thought in an altogether more radical way. Many of the elements of these sequencers are perfect examples of their kind, for which it would be impossible for me to suggest alterations, but none of them, I believe, embodies the perfect synthesis of classic sequencer design. What I propose to do in this article is to create, hypothetically, the perfect sequencer, which in the tradition of great puns, we'll call Dream Sequence. This is all, of course, highly subjective, and I would be very interested to hear what other Amiga musicians have to say about my 'perfect' design, and perhaps suggest some improvements that I may have overlooked. And hey, let's hope some programmers are listening.

DREAM, DREAM, DREAM

I believe that the best sequencer program on the Amiga is Dr T's *KCS*, many elements of which I propose to retain in Dream Sequence. The greatest thing about *KCS* is its front end, which is so well laid out, accessible, and friendly that it deserves to be transplanted wholly into our new creation. This will give us a complete window (which we'll call the tracks window) in which we can see all 36 tracks (we'll take out the last twelve in *KCS* for a new feature to be introduced shortly), and name, mute, solo, time shift, merge, and delete them, all with total ease. We'll keep the essential Quantise button on this screen, and also retain the Rechannelise gadget so that it's simplicity itself to change which MIDI channel you want to record, without ever going to another screen.

KCS is already great for recording. Pressing F2 toggles the Record button on and off, and the program automatically loops the sequencer to however many bars you want to record for, and puts the next track into record immediately so that you can just get on and put ideas down. However,

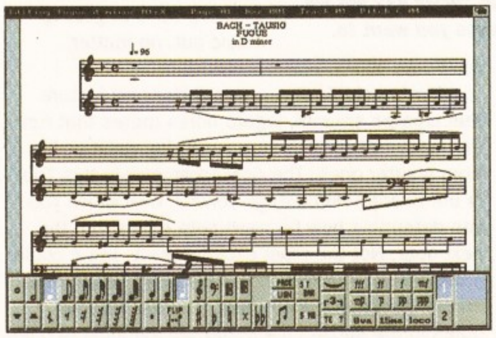


Here, then, is my vision of Drem Sequence. It's based on Dr T's KCS, but it's even easier to use.

in our improved version, there should be a gadget on the main screen which enables us to determine how many bars to loop, rather than having to go to the edit screen whenever we want to alter it.

Now let's introduce another change – instead of using menu items to affect tracks in different ways, let's make it more logical. For example, instead of having to choose Name Track from the Track Functions menu before we can type in a new name, why not just allow us to click on the name itself, instantly bringing up a cursor for inputting new text? A simple return could exit the text editing mode. Let's have it so that all you have to do is click once on the number of the track to mute or solo it, depending on whether the mute or solo button is highlighted on the panel. And what about if, instead of having to go to the editing screen to copy a track, we can just click and hold the track number on the main sequencing screen and drag the entire thing to a new location? Perhaps holding Shift at the same time would allow us to move it, instead of copying it. We should be able to change the MIDI channel on each track's by altering parameters on the main screen too.

So far, then, we've got a program which contains most of the options necessary to record up to 36 tracks without ever leaving our initial start-up screen, or access any fussy menu items. However, unless we're aiming to record the entire length of the song over all tracks, we're going to need a way of bolting sections together into longer pieces. For example, if our looping section is eight bars long, and it's a verse, we need to be able to record a new eight bar section, called chorus, perhaps another four bar middle eight, and so on. With KCS this is quite fiddly, but this is where we bring in our major alteration. All that we've been recording in these 36 tracks is our first Section. To create a new one, we simply choose New Section from the Section menu (all fantasy creations, of course), and up pops a new window with 36 empty tracks in. We can change the length of this section with the section length gadget on the main screen and record as normal in our new window.



And, of course, we couldn't do without a smart score-writing package, like Notator-X.

We'll allow up to 99 sections in the sequencer, and to arrange them into a song we'll create a new window where tracks 37 to 48 were in the original *KCS*. This will be a scrollable list of sections, which can be copied, moved and renamed in the same way as tracks are in the Tracks window. Clicking on any section in the section list will automatically bring up the relevant window in the tracks section to the right. Anyone who's used the Atari ST will recognise this design as very similar to the one used in Emagic's (formerly C-Lab's) Notator. Gosh, sacrilege, we're taking ideas from the ST! Well, it's a great design and we're still dreaming, remember.

EDITING EASE

By far the best editing environment on the Amiga is that used in *Music-X*, so I propose we nick this wholesale for our hypothetical masterpiece. The way the program uses horizontal bars to represent notes, and vertical bars to represent velocity is so instinctive that it has to be part of our ultimate software, and the use of different colours to indicate different MIDI channels is a very helpful addition. As in *Music-X*, we should also provide for a proper event editor, which will allow us to really get to the tiny details of individual notes.

Music-X is also to be our inspiration when it comes to integrating Amiga samples into the picture. The powerful way in which it allows you to alter the volume and pitching of each sample is excellent, and the fact that they respond to velocity and program change messages has to be an essential part of our perfect software.

Believe it or not, that about raps it up. Here's a sequencer in which we can record up to 36 tracks into anything up to 99 different sections, all of which can be arranged into a full length song in real time without leaving the main page. Editing will be as easy and as accurate as the Amiga allows, and samples can be effectively integrated with minimum fuss. If our Dream Sequence program were to exist, I would move over to it immediately. Of course, other extras would be welcome, such as a virtual MIDI mixing desk (a la Dr T's *Automix*), and a well designed score writing program, but hey, we've got to wake up at some point. AS



SUBSCRIPTIONS

Graeme Sandiford explains how to extract and use, the contents of this month's Subscribers' disk.

HELPING HAND

In order to fit more on to this disk, it is not bootable and all the files have been archived. To gain access to the contents, you need to follow a few simple instructions. To de-archive the files, simply double-click its Extract icon. Doing so will extract the files to RAM: – you can then copy these files to a floppy disk or hard drive.

AMOSCODE

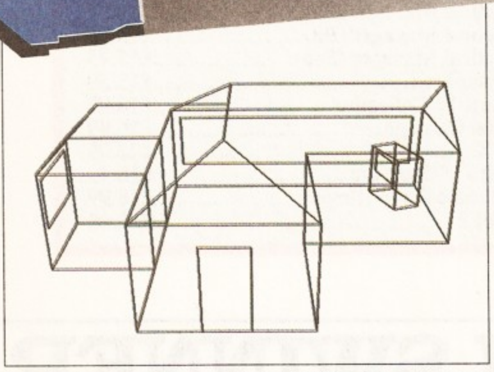
This archive (double-click Extract_Amoscode) contains the AMOS listings from the last three issues of AMOS Action. Once extracted, you will find four files in your RAM: directory: AnimToy.AMOS, Plasma.AMOS, Spread.AMOS and 3dcube.AMOS.

3dcube.AMOS is taken from this month's 3D tutorial, on page 73.

AnimToy.AMOS and Spread.AMOS are taken from issue 40's Colour feature. They can both be found on page 72.

Plasma.AMOS is taken from the groovy retina-burning Plasma Cloud tutorial on page 54 of *Amiga Shopper* 39.

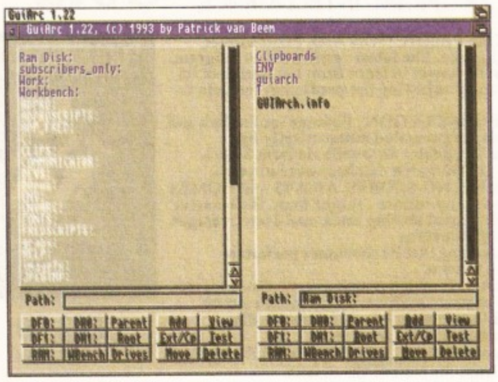
All of these listings are in their original form and can be loaded straight into AMOS.



Create impressive results in AMOS without typing – use the listings on this month's disk.

LUSCIOUS LISTINGS

In order to save your time and energy, this month's listings from AmigaDOS, AMOS action and Code Clinic have all been saved as the following files AmigaDOS.asc, Amos41.asc and Cclinic.asc. They have been saved as ASCII text files, so you will have to load them as such. So, if you get any messages from programs like AMOS complaining that they can't read the file, this is probably the reason why.

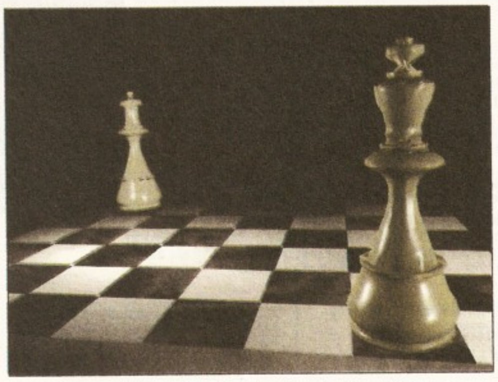


Make adding and extracting archives less of a chore with GuiArc.

COMPLETE CHESS

This archive (Extract_Chess) contains a complete set of 3D chess pieces, stored in *Imagine* format. They were actually taken from the *Syndesis 3D-ROM* (reviewed on page 18 of issue 40), which has many more objects. If you would like to see any other objects from this disc or any other PD models, write in with as much detail about the types of objects you would like. If you have created a model that you are exceptionally proud of, why not send it in and show off your model-building prowess to your fellow *Amiga Shopper* readers?

You will notice, on loading the chess pieces, that there is only one model of each piece, so you will need to copy and paste them. You will have to create your own board – to do this, just create a plane and add the checks texture that comes with *Imagine*.



The chess pieces in this image are included on the subscribers' disk.

VIRUS CHECKER 6.41

Virus Checker is a program that can be used to help keep your system free from viruses. Once installed, it will check each disk that is inserted into your machine. If you have Commodore's Installer utility, make sure it is in your C: directory – then you will be able to run the installation script. If you don't, you need to copy the files to your system manually. To do this, you must copy the files VirusChecker.brain and Bootblock.brainfile to your L: directory. All of the library files should be copied to your Libs: drawer and Virus Checker itself can be copied to your Wbstartup drawer, to execute it at startup, or any other directory. If you want more information, use AmigaGuide or MultiView to read the documentation.

GRAPHICAL GUIARC

GuiArc acts as a graphical front-end for archiving programs, which tend to be CLI-only programs. This archive (Extract_GUIARC) also contains several archiving programs in its C directory – these along with any libraries that you don't have should be copied across to your system disk or partition. Extensive documentation is included as well.

GuiArc works in much the same way as directory utilities, such as Opus or SID. It has two directory windows: one source directory and one output directory. To de-archive a file, you first need to select it and an output directory, then click on the Ext/Cp button. You can also create your own archives and view an archive's contents. If you encounter difficulties, please consult the documentation.

XMASH AND XMASHGUI

This Archive has two folders: one contains Xmash, and the other its GUI. Xmasher is a disk cruncher, that is, it will compress the contents of a disk into a single file.

Installation is simple; just copy all of the contents of the C directory to your system's C: directory. You can also copy across the libraries manually if you wish, or use the installation script supplied. If you do use the script, be sure to have iconx in your C: directory.

If you wish to use Xmash's GUI, you can copy it to any drawer you wish. This program will provide you with an easy-to-use interface, which can be used to select the device you want to be mashed and its destination directory.

IF IT GOES HORRIBLY WRONG...

If you encounter any problems after following the instructions on this page, please write in with details of your hardware and software setup. Address your queries to:

Graeme Sandiford
c/o *Amiga Shopper*
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3. Sort code ☐☐ ☐☐ ☐☐

4. Account in the name of:

....

Instructions to bank/building society

– I instruct you to pay direct debits from my account at the request of Future Publishing Ltd.

– The amounts are variable and may be debited on various dates. I understand that Future Publishing Ltd may change the amounts and dates only after giving me prior notice.

– I will inform you in writing if I wish to cancel this instruction.

– I understand that if any direct debit is paid which breaks the terms of this instruction, you will make a refund.

5. Signed.................................**Date** ....

BEGINNERS START HERE

What are ARexx and AmigaDOS?

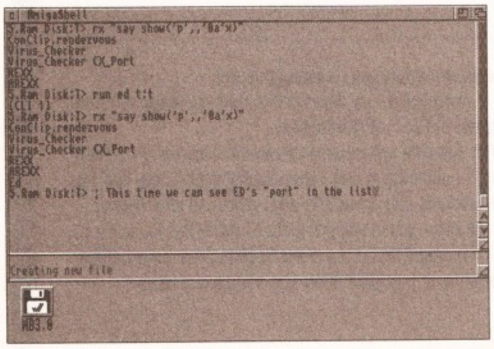
AmigaDOS is the Amiga's device operating system. Although it operates at several levels, this series examines the most accessible one, through the Shell's command-line interface. At this level AmigaDOS works as a series of typed commands; just like MS-DOS, UNIX and CP/M on other platforms. The core set (there's around a hundred commands in all, with thousands of variations) can be expanded by programmers using low-level languages or by users writing simple AmigaDOS programs called scripts. Even if you're not keen on programming, AmigaDOS is a great route to streamlining the operation of your machine and getting the most from it.

ARexx, on the other hand, is a programming language in its own right just like BASIC, FORTH, C, APL or any one of a multitude of others. It was developed from an original language devised for IBM mainframes and has become a legend in its own right, supplanting the dreadful AmigaBASIC from Workbench 2. By definition an ARexx program can perform some stand-alone function, just like conventional languages, or an extension to some another application: including AmigaDOS.

The great benefit for beginners is that ARexx is very simple to learn, yet powerful to boot. Its typeless variable structure makes programming simpler than the typed approach of C, Pascal, Modular and Oberon (to name four) and is closer to the way the average person thinks. By using the Amiga's multi-tasking features, ARexx can communicate with one or more applications at the same time, passing data between them or even automating complex tasks.

Isn't programming very complex? I thought it was the preserve of high-brows and spotty adolescent males.

Programming, like most pursuits, is what you make it. Fishing is a highly technical sport if you go into it in any depth, but it's also the most popular pastime in Britain. Not everyone will take to it, but by reading this far you have already taken the first steps. Taking things slowly is the key – examine each step in turn and watch what's going on. Very few programs ever do anything new. In no time at all you will be able to use trusted techniques to build your own code. In the same way a child uses lego bricks to build a house, all the parts are there and all you have to do is identify them and put them together in the correct order.



Using ARexx in direct mode to check the current ports. This "before and after" example shows how ED's port appears while it's running.

Auto Scripts

Mark Smiddy demonstrates a method of automatic script creation and shows how to use special AmigaDOS commands in ARexx.

AmigaDOS script programming is not everyone's cup of tea, but then again, neither is AmigaDOS. Many people are perfectly happy booting up with *Directory Opus* or something similar and letting the machine do the work. There's nothing wrong in using tools like this, or even Workbench come to that – that's exactly what they are there for, but no tool is a universal panacea to the ills of computing. The trick is in knowing when to use which tool. For example, formatting a single disk is more convenient from Workbench than in a Shell (unless you use an alias). Conversely, getting assignment or other DOS specific information is only possible with AmigaDOS commands.

More importantly, some repetitive tasks can be automated through AmigaDOS and one of the most useful tools the AmigaDOS programmer has at his disposal is LIST. LIST, a variant of the DIR command, provides information on AmigaDOS objects like files and directories in a tabulated format. Information such as an object's creation date and protection flags can only be viewed with this command. (This is possible with Workbench 2, but a lot more fiddly). Moreover, the command's output can be customised and re-directed to a file and therein lies a tale.

SIMPLE AUTOMATION

Many AmigaDOS commands, especially in recent releases, support full pattern matching but many third-party programs do not. In addition, you may have written an ARexx script to perform some action on a file, but what happens if you find you want to act on many files in one pass?

Let's take a simple example, VILBM is a public domain IFF picture viewer similar to the AmigaDOS 3 command MultiView and both accept a filename but not a pattern. Now imagine you have a disk full of pictures that you want to view. It would be really tedious to enter each one in turn (or use the file requester from MultiView). Consider this:

```
1>LIST DF0:#?.IFF LFORMAT "VILBM %s%s"
VILBM Pix:Picture1.IFF
VILBM Pix:Picture2.IFF
.
.
.
VILBM Pix:Picture43.IFF
```

LIST using the LFORMAT parameter to generate a command line for every file on the root directory of the disk that ends in ".IFF" selected using LIST's pattern matching. This could be written to a file and executed as an AmigaDOS script thus:

```
1>LIST >T:view DF0:#?.IFF LFORMAT ☛
"VILBM %s%s"
1>EXECUTE T:view
```

Each object's name and path appears in the LFORMAT string at the position marked by the template strings "%S". (A complete list of these appears in Table 1). The same thing written in a more appropriate fashion for AmigaDOS 2 and above might look like this:

TABLE 1: LIST'S LFORMAT QUALIFIERS

All versions	
%S:	Pathname only.
%S%S:	The pathname and object name.
%S%S%S:	Pathname and object name, pathname.
%S%S%S%S:	Pathname, object name, pathname, object name.
From 2.0 onwards:	
%A:	The object's attributes (protection flags).
%B:	File size in blocks.
%C:	Comment.
%D:	Creation (or last modified) date.
%K:	Physical position on disk.
%L:	Length in blocks.
%N:	Name.
%P:	Complete path (without an object name).
%T:	The time associated with the object.
From 2.1 onwards:	
%E	The file's extension (.INFO, .IFF etc.)
%M:	The object's main name sans extension.

```
1>LIST TO T:view DF0:#?.IFF LFORMAT ☛
"VILBM %p%n"
1>EXECUTE T:view
```

This function is so incredibly useful that it has been compressed into a command extension script called SPAT available with Workbench 1.3 and later. SPAT creates the command file and executes it for you so the previous example could have been written more simply:

```
1>SPAT MULTIVIEW DF0:#?.IFF
```

Like most things in AmigaDOS, there is more than one way to skin this problem and it may be more convenient to customise the output. For instance, if you are viewing a series of files you might prefer to see them in alphabetical order. This can be accomplished using a few lines of code – here is the example expressed in terms of AmigaDOS 3 – although other versions are similar in principal:

```
1>LIST RAM:#?.IFF LFORMAT "MultiView ☛
*"%P%N*" SCREEN" TO T:VIEW
1>SORT T:VIEW TO T:VIEW2
1>EXECUTE T:VIEW2
```

Note that in this example the path and name have been surrounded in escaped (*") quotes. One line from the resulting file (VIEW) might look like this:

```
MultiView "Ram Disk:Picture.IFF" SCREEN
```

MASTERCLASS

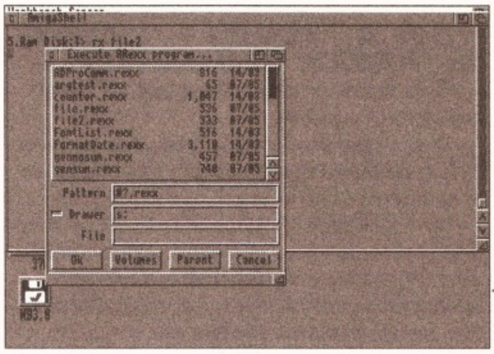
This month's Masterclass is more of a hint than a tutorial. Although the fact is not widely known, the AmigaDOS editor, ED has an ARexx port that can be used to control it. You may have noticed this when misspelling extended commands and getting a strange message like this: ARexx – XXXX (5,1). The more adventurous among you may have even noticed the ARexx menu residing within ED. But what use is this unless you know the host name and the command set? ARexx has a useful command to find the name of any public message port (that's a host address to you and I) that can be accessed straight from AmigaDOS.

For the sake of example we'll start ED running as a task:

```
1>RUN ED T:demo
[CLI 2]
1>RX "say show('p',,'0a'x)"
ConClip.rendevous
REXX
AREXX
Ed
```

This list contains the host names of all the public message ports attached to the system and managed by EXEC. The first three in this example belong to CONCLIP and ARexx – you must not go fiddling with them. The last one on the list, "Ed", is ED's port and provided for ARexx. This command will display the name of all public ports, so you can check the ARexx host address of any piece of software in much the same way.

ED accepts commands from ARexx as if they had been typed as extended commands, so there is little advantage in using the port because an ED command file will usually work just as well (unless you need ARexx's control structures).



One of the example programs running to show it is possible to mix AmigaDOS and ARexx seamlessly. This simple ARexx program will run another ARexx program from a requester.

If the quotes were not included, MultiView would see "Ram" and "Disk:Picture.IFF" as two separate arguments separated by a space and would get confused. This technique can be expanded to a simple script, VIEWPAT (see listing 4 on page 70) that saves all the hassle of entering it all each time. If VIEWPAT is used with MultiView (as suggested here) it can be used to show IFF graphics files and text files too. VIEWPAT is a simple AmigaDOS script (command file) and can accept multiple arguments at the command line, for example (assuming the 'S' bit has been set).

```
1>VIEWPAT DF0:#?.PIC
1>VIEWPAT picture1 text df0:pix#? #?.IFF
```

How it Works:

1. Provides the argument template for the script. It should be noted that this script uses an unusual required argument with the FINAL (/F) option. This ensures that you type at least one argument but may enter multiple arguments (filenames or patterns) without confusing the parser. The "/F" option is not available in AmigaDOS 1.3 and should be omitted if you are modifying this script for use with that system.

2–3. Re-define the < and > characters as braces for clarity.

4. Lists all the files matching the multiple pattern entered at the command line using an LFORMAT string as described above. Note the use of the SCREEN option to MULTIVIEW: this increases the display speed for IFF pictures and retains the correct colour and resolution. (You can omit this to save memory and display files on the Workbench screen. The same applies if you are using VILBM which does not have the option).

5. Sorts the files into alphabetical order and saves the sorted list as VIEW2. The string "{$$}" inserts the current Shell process number thus ensuring the temporary filename does not clash with another of the same name.

6. Executes the command file, displaying the files in order.

7. Removes the temporary files and cleans up.

SCRIPT CONCLUSION

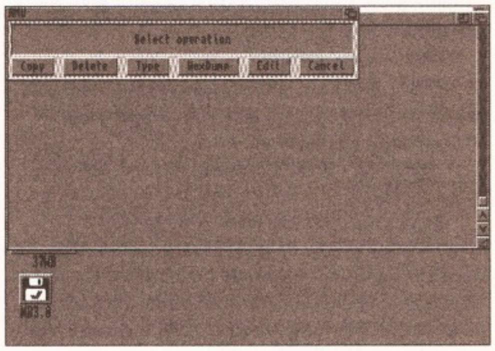
This month you have learnt the rudiments of script programming – but this is just skimming the surface. AmigaDOS is the most powerful DOS programming language on any home microcomputer; far more so than anything yet devised for common PCs. In this feature I hope to have proved there is more to the Amiga than pretty graphics and impressive sound, but a real enthusiast's engine where the user's imagination is the only limiting factor.

AMIGADOS AND AREXX

Regardless of how much developers support it, ARexx still seems a mystery to most Amiga users, yet few programming languages can claim its simplicity and power.

William Hawes, who devised the Amiga version, did not see ARexx as an end in itself, but rather as a means to an end, and this is probably what most users find most confusing. Conventionally speaking, programming languages are regarded as a final solution and it is this thinking that strangles ARexx.

Amiga Shopper reader, John Kenyon recognised this when attempting to devise a new command for Softwood's *Final Copy* and he contacted me via CIX with the following problem: how can I get AmigaDOS to return a result to ARexx without having to fiddle around with file based commands? John's code used the AmigaDOS 3 command, REQUESTCHOICE, to



Another example of using an AmigaDOS program from ARexx. This is part of a dummy program using RequestChoice.

SMIDDY'S RED HOT TIP: A MOVING EXPERIENCE

One command that is still missing from AmigaDOS is "move". You can move an object from one place to another on the same disk using RENAME. For example, you could move TYPE from the command directory to the root directory like this:

```
1>RENAME C:TYPE TO SYS:TYPE
```

and back again:

```
1>RENAME SYS:TYPE TO C:TYPE
```

This is handy in itself, but is best expressed as an ALIAS like this:

```
ALIAS MOVE RENAME [] TO
```

and is used thus:

```
1>MOVE SYS:TYPE C:TYPE
```

RENAME performs the move operation by changing a pointer in the disk's file structure, a subject which is beyond the scope of this article. It's sufficient to say that when moving a file (or even a directory) around on the same disk, AmigaDOS does not physically move anything. You can prove this by moving the entire C directory from it's normal position on the disk to, say the DEVS directory like this:

```
1>CD SYS:
1>RENAME C TO DEVS
renaming C as WB3.0:DEVS/C
```

and put it back again (before you do anything else):

```
1>CD DEVS:
1>RENAME C TO /
renaming C as WB3.0:C
```

You cannot rename from one disk to another like this:

```
1>CD SYS:
1>RENAME C TO RAM:
Can't rename C as RAM Disk:C because rename across devices attempted
```

Similarly, you cannot rename to a directory that does not exist like this:

```
1>RENAME ENV:#? AS Environment
Destination "Environment" is not a directory
```

For both of these cases you have to use a COPY...DELETE couplet: that is, COPY the file(s) first and delete them afterwards.

It's probably worth mentioning, in case you hadn't already noticed, that early versions of RENAME do not support pattern matching. This is a real pain, but once again LIST comes to the rescue. It was used as the basis of a little pattern matching utility called DPAT and can be used like this on Workbench 1.3's RENAME to move all the commands in the C: directory to the root of the current boot disk:

```
1>DPAT RENAME C:#? SYS:
```

AMIGADOS AND AREXX

LISTING 1: USING REQUESTCHOICE

```
1. /* Sleep Arexx - requestchoice example*/
2. address command
3. rxset sleep '`requestchoice "Rexx Clock" "Sleep for how long?" ☛
"5 mins" "10 mins" "15 mins"`'
4. tx = getclip('SLEEP') /* SLEEP must be in UPPER CASE!! */
5. if tx = 0 then say "Cancelled"
6.   else say "You entered" tx*5 "mins"
```

LISTING 2: USING REQUESTFILE WITH AREXX VARIABLES

```
1. /* File Arexx - requestfile example*/
2. address command
3. drawer="rexx:"
4. save="savemode"
5. pattern="#?.rexx"
6. requestfile '>env:file title="Execute ARexx program..." ☛
drawer='drawer 'pattern='pattern save
7. rxset file '$file'
8. filename = getclip('FILE')
9. if filename = "" then say "Cancelled"
10. else rx filename
```

LISTING 3: USING REQUESTFILE WITH AMIGADOS VARIABLES

```
1. /* File2 Arexx - requestfile example*/
2. address command
3. setenv drawer '"rexx:"'
4. setenv pattern '"#?.rexx"'
5. setenv save '"savemode"'
6. rxset file '`requestfile title="Execute ARexx program..." ☛
drawer=$drawer pattern=$pattern $save`'
7. filename = getclip('FILE')
8. if filename = "" then say "Cancelled"
9.   else rx filename
```

LISTING 4: VIEWPAT

```
1. .key files/a/f
2. .bra {
3. .ket }
4. LIST {files} LFORMAT "Multiview *"%P%N*" SCREEN" TO T:VIEW{$$}1
5. SORT T:VIEW TO T:VIEW{$$}2
6. EXECUTE T:VIEW{$$}2
7. DELETE T:view{$$}(1|2) QUIET
```

provide requesters for his ARexx macro. The command's output was re-directed to a file and read back into ARexx using file commands. Clearly this is awkward and John reasoned there must be a better way, but what?

This elegant solution is anything but obvious – unless you treat AmigaDOS and ARexx as a hybrid. ARexx has an AmigaDOS command to set one of its internal "clips" and this forms the basis of this elegant solution. Rather than using ARexx commands to parse an AmigaDOS file directly, we can use an ARexx support program to read the variable from AmigaDOS. This takes the following basic form from the Shell:

```
RXSET <Clip> <Value>
```

RXSET is part of ARexx and lives with the other ARexx programs like RX and TCO. We can use it from AmigaDOS like this:

```
1>rxset OK `requestchoice "Title" "Body"
"OK" "Cancel"`
```

As you may already know, the special "`" symbol (accessed with alt+' on UK keyboards) forces AmigaDOS to execute a command as part of the command line and return the result as an argument to the main command. In this case the result from REQUESTCHOICE is sent as an argument to RXSET: so if you hit "Cancel" the effective line would look like this:

```
1>rxset OK 0
```

The clip is read back into ARexx using GETCLIP() like this:

```
var = GETCLIP('OK')
```

It's absolutely vital to observe the case; clips set with RXSET from the Shell appear in ARexx's clip list in UPPER CASE (capitals). ARexx does differentiate between the case of clips names, so if you entered a line like this instead:

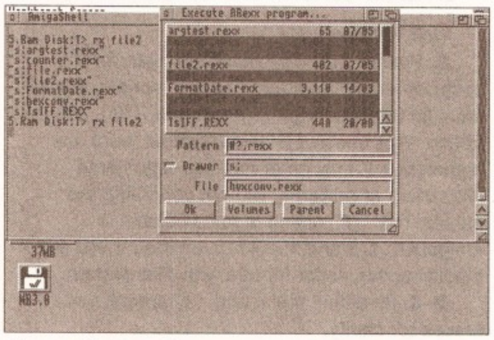
```
var = GETCLIP('ok')
```

Will not return the correct result and worse, ARexx does not return an error, but creates a non-existent variable which can cause confusion later.

Listing 1 is a complete example of these techniques in action; here's how it works:

1. Is a comment line – the first line of every ARexx program must start with one and it's a good place to put at least a title.

2. Sets the ARexx host address to COMMAND a special case that tells ARexx to divert all unrecognised commands to AmigaDOS. If you are using this fragment in existing ARexx code, you must remember to re-set any existing host address.



The mutliselect demonstration in operation. This code fragment does nothing in itself and is intended as a building block for other applications.

3. Gets the result from the user to the ARexx clip, "sleep". Note that when this code is used in ARexx the auto-executing part of the command line must be enclosed in ARexx "'" quotes.

4. Simply reads the result from line 3 into the variable "tx".

5. Tests if the cancel button was clicked. (The last button on the requester (reading from left-to-right) always returns 0.)

6. Uses some in-line ARexx maths to return the result.

USING REQUESTFILE WITH VARIABLES

RequestChoice is a simple command that can usually use constant strings, that is, responses defined in the program. RequestFile is a little more complicated though. It has the option of a great number of variables such as a pattern and default drawer. While these can be defined as part of the command line, you may find it helpful to include variables. (Remember variables can also be used as constants, that is, defined once at the head of the program then used in different places. This makes editing a lot simpler because you only have to change a single instance).

There are two methods available – you can either use ARexx or AmigaDOS variables. Each one has its pros and cons and it really depends on the program as to which is more useful – a hybrid (a bit of both) often represents the best solution. Listings 2 and 3 show the same program expressed in both methods. Both programs set the current directory to REXX: (usually S:) and display only files ending in ".REXX" allowing you to select a program from the list and execute it directly.

HOW IT WORKS – LISTING 2: (AREXX VARIABLES)

1–2. Starts the program and sets the host address to AmigaDOS.

3–5. Define some ARexx variables to be used by REQUESTFILE. You can switch "save mode" off by setting the value in "save" to a space.

6. Calls REQUESTFILE passing ARexx variables to the keywords – note how ARexx quotes (') are used to separate the AmigaDOS parts of the command line from the ARexx variables. The result from the command is send to a global environmental variable, "file".

7. Collects the result from the environmental variable, file using the RXSET command. Note how this is read as an environmental variable with the dollar operator.

8. The clip (created by RXSET) is read into the ARexx variable, "filename".

9. If the Cancel button was clicked, REQUESTFILE returns a blank string, this tests for and acts on that action.

10. If a filename was used, this executes the ARexx program.

HOW IT WORKS – LISTING 3: (AMIGADOS VARIABLES)

This version of the ARexx REQUESTFILE example is slightly simpler than the previous example, but has to create more temporary files in the RAM disk. (Each global environmental variable is stored as a file).

1–2. Work as listing 2.

3–5. Set some global environmental variables. The advantage of this method is that the variables can be accessed directly from AmigaDOS as variables or files. On the down side, they are a exposed and might get deleted or overwritten by some other AmigaDOS program.

6. Uses automatic result insertion (see Listing 1, Line 3) to read the result from REQUESTFILE directly back into an ARexx clip.

7–9. As per Listing 2. AS

GOT A PROBLEM?

If you have a burning problem with AmigaDOS or a related topic and you just can't wait for the next issue of AmigaDOS, you can reach me at CIX as SMIDOID or via my Internet EMail address as "smidoid@cix.compulink.co.uk".

AMOS Action

Simon Green shows you how to take AMOS into 3D – and beyond...

Well, summer is here – the sun is shining, the birds are singing, and probably the last thing on your mind is computer programming. Nevertheless, this month we turn our attention to the subject of 3D graphics. Many people tend to think that the techniques necessary for producing three dimensional graphics must be very complicated and involve a lot of mathematics. But, in fact, using just AMOS and a few simple equations, it's surprisingly easy to start producing images that will take your brain into another dimension.

The graphics we will produce are of the simple "wireframe" variety which consist simply of transparent outlines of the object, but the same basic techniques can with some effort be extended to produce solid objects, complete with shading.

YOU SEE ME... IN 3D

The first problem we come across is how to represent the object that we are going to display. Fortunately, long ago, scientists discovered that the space we all inhabit can be split into three distinct dimensions. It's true – any point in space can be uniquely described by just three numbers.

Anyone who has even drawn a graph should already be familiar with the first two dimensions, which (for no very good reason) are usually referred to as X and Y. All measurements are taken from a central fixed starting point known as the origin. By convention, X refers to the horizontal distance of a point from the origin and Y refers to the vertical distance. To work in three dimensions we simply add another axis, which alphabet enthusiasts will have no difficulty in guessing is usually labelled Z. In computer graphics the Z axis is usually taken as pointing into the screen, as shown in diagram 1.

So, in summary, we have the familiar X and Y coordinates describing the position of the point in the same plane as the screen, with an additional Z coordinate that gives the depth of the point into the screen. The first object we're going to display is a simple cube. Cubes are one of the simplest possible solids, having just 8 vertices (corner points) and 12 edges (count 'em!). We can describe each of the corner points in our cube by three numbers, corresponding to their X, Y and Z coordinates. To store this information we use a two-dimensional array called V.

```
DIM V(NUMPOINTS,3)
```

"NUMPOINTS" is a constant defined earlier that equals the required number of points in the object. Each entry in the array holds three numbers – the X,Y and Z coordinates of the point. Hence, the first point of cube is defined by:

V(1,1)=-50 (X coord) V(1,2)=50 (Y coord)
V(1,3)=-50 (Z coord)

This describes a point 50 units to the left of the origin, 50 units up from the origin and 50 units out of the screen from the origin, as shown in the diagram 2. In the program, all the information describing the object is read into the arrays from data statements at the end of the program, in the "CREATE_OBJECT" subroutine.

X, Y AND ZEE

Once we have done this for all the corners of our cube, we have defined the basic shape of the object. However, since we are going to be drawing our object using lines on the screen and not just points, to complete our description we need to describe the lines that join up these points. The most efficient way to do this is to simply give the numbers of the end points of each line.

To store this information we declare another two-dimensional array, called simply L (for line) :

```
DIM L(NUMLINES,2)
```

Each entry contains the numbers of the start and end points of the line. If we've previously defined the two points 1 and 2 in the V array, the data...

```
L(1,1)=1 L(1,2)=2
```

defines line number 1 to be between points 1 and 2. In this way, as many different lines as necessary can be drawn between the points, without the points having to be re-calculated. For example, you could try adding two extra diagonal lines, one between points 4 and 6, and one between points 3 and 5, to the cube in the program. To do this, just increase the number of lines by changing "NUMLINES=12" to "NUMLINES=14", and then add two extra lines of data to the "LINESDATA" section at the end of the program:

```
DATA 4,6 DATA 3,5
```

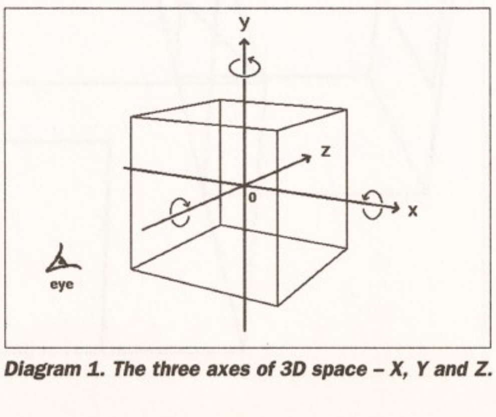
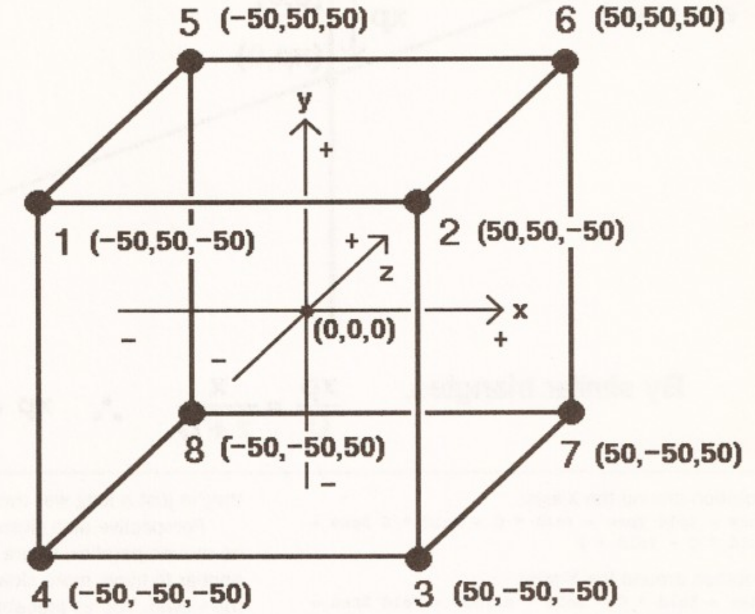


Diagram 1. The three axes of 3D space – X, Y and Z.

Diagram 2. A cube – simple but attractive, in a geometric sort of way.



When you run the program you should find that our cube has grown two new diagonal lines joining up the corners. Lovely. The complete cube can be seen in diagram 2.

GIVE IT A SPIN

Once we have described our object, there are various calculations we can perform on the numbers to transform the object in various ways. One of the most entertaining is rotation. Not surprisingly, in our three-dimension world, it turns out that you can rotate an object in no less than three exciting different ways. An object can be rotated around any of the three axes – X, Y or Z.

Rotating the object around the x-axis causes the object to tilt forward towards us. Rotating it about the y-axis causes it to twist so that the right hand side of the object swing away whilst the left hand side swings towards us. Finally, rotating around the z-axis causes the object to roll anti-clockwise in the same plane as the screen, exactly the same as a normal rotation in two dimensions. Don't worry – you'll find these rotations a lot easier to visualise once you've actually seen them in action on the screen. The circular arrows on diagram 1 show the direction of rotation on each axis. Note that these directions are for positive angles – negative angles will cause the rotation in the opposite directions.

I'm not going to attempt to explain how the magic formulae that perform rotations actually work, but needless to say it involves lots of triangles and trigonometric functions and stuff like that. Have a look in a maths textbook if you're really interested!

ROTATION FORMULAE

Each rotation simply takes the X, Y and Z coordinates of a point, rotates the point about the appropriate axis by the angle given, and produces the three new coordinates of the rotated point.

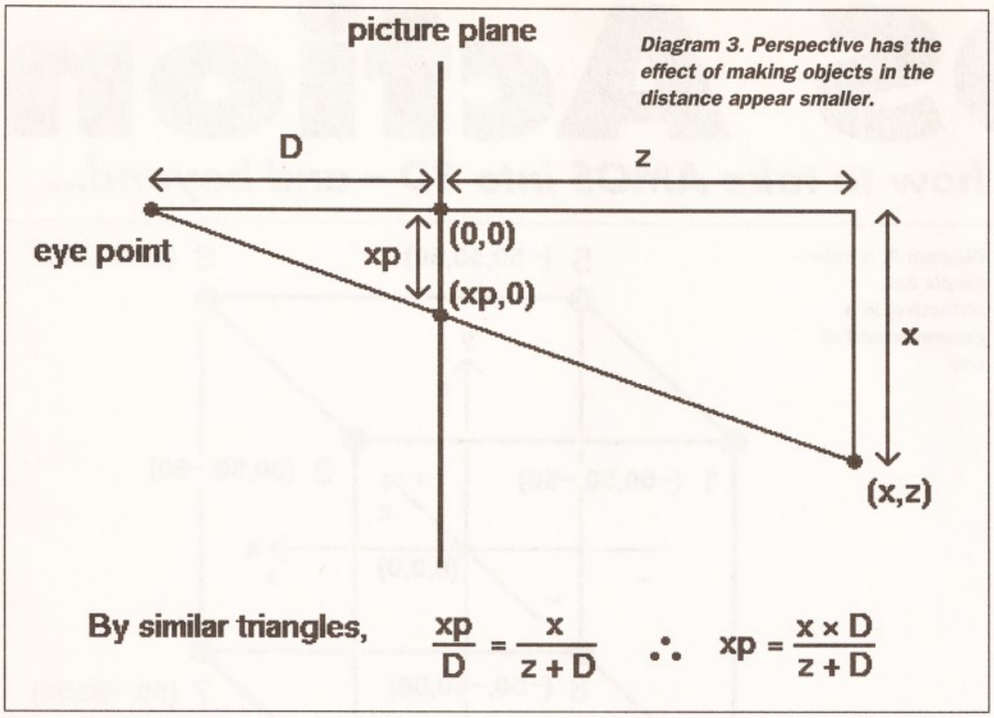
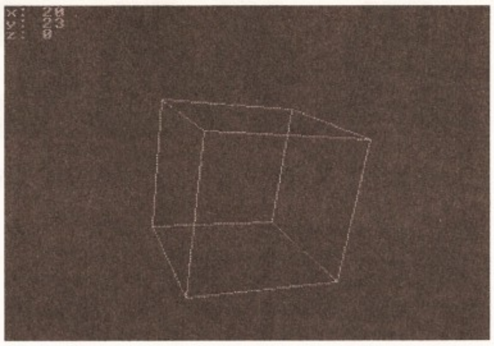


Diagram 3. Perspective has the effect of making objects in the distance appear smaller.



The program in action. It looks more exciting when it's moving... honest!

Rotation around the X-axis:

```
Xnew = Xold Ynew = Yold * C + Zold * S Znew =
Zold * C - Yold * S
```

Rotation around the Y-axis:

```
Xnew = Xold * C - Zold * S Ynew = Yold Znew =
Xold * S - Zold * C
```

Rotation around the Z-axis:

```
Xnew = Xold * C - Yold * S Ynew = Xold * S +
Yold * C Znew = Zold
where S = Sin(Angle)      C = Cos(Angle)
```

Be very careful when typing in this part of the program – it's very easy to get all those Xs ,Ys and Zs mixed up, and if you do make any mistakes you'll find the results can be very bizarre. Notice that in each case, the co-ordinate corresponding to the axis we are rotating around stays unchanged. This is obvious if you think about it. For example, if we rotate the object around the z-axis, it is simply rotating in the same plane as the screen, and so all its Z coordinates remain the same. Also note that in the program, the Sin and Cos values of the angles for each rotation are calculated outside the loop, since they remain the same for all the points. This gives a considerable time saving.

GETTING THINGS INTO PERSPECTIVE

All this messing about in three dimensions is all very well, but at the end of the day we need to display the results on the screen, which unfortunately is completely flat and two dimensional. So how do we represent three dimensions on a two-dimensional screen? We could just ignore the Z coordinate of each point and use the X and Y coordinates directly, but this gives very unnatural-looking, ambiguous results. (You can try this by making a simple change to the program).

Anyway, we need some method of giving the image an illusion of depth. Fortunately, artists have known this trick for centuries – it's called perspective. You may have noticed that things tend to appear smaller when they are in the distance than they would if they were right next to you. The further away things are, the smaller they appear to be.

The reason you don't usually notice this is that your brain naturally assumes that objects that appear small in the distance aren't actually small, they're just a long way away.

Perspective also gives rise to an effect known as motion parallax, where objects in the distance appear to move more slowly than objects close to the viewer. You've probably noticed this when travelling by car or train – trees by the side of the road or track seem to move very quickly, whereas hills in the distance hardly seem to move at all. This effect is very popular with the authors of horizontally-scrolling shoot-em-ups, because it gives a quite convincing illusion of depth. Motion parallax is very important in making moving objects appear solid. The still images on these pages might not look very "three-dimensional", despite the fact they are in perspective, but when they are seen moving on screen, the illusion is much more convincing.

So, what we need to do is somehow make the parts of our object that are further into the screen smaller. Now, if you remember, the Z-axis points into the screen, so the larger the Z coordinate, the further the point is into the screen. Therefore, what we need to do is divide the X and Y coordinates of each point by some number related to the Z coordinate, so that the greater the Z coord, the smaller the final X and Y coords will be, and the nearer the origin the point will appear. This has the effect of making lines that would otherwise be straight appear to converge to a point in the distance, known as the vanishing point. The equations that are normally used are as follows:

```
PX = X * D / (Z + D) PY = Y * D / (Z + D)
```

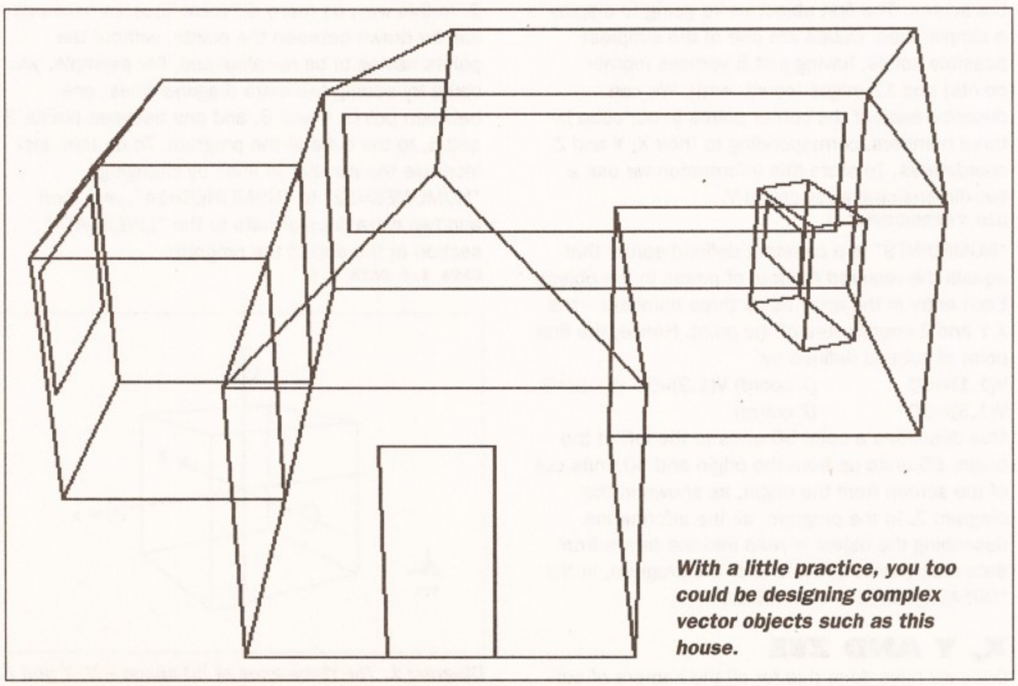
Diagram 3 shows how these equations are derived, using similar triangles.

Since the factor, D / (Z + D) is common to both equations, it is usually precomputed to save time:

```
F = D / (Z + D) PX = X * F PY = Y * F
```

D is the distance of the viewpoint from the origin. You'll find that the smaller you set D, the more exaggerated the perspective effect becomes. Set it too small and you'll find the object really stretches out of the screen, like in a bad 3D movie. However, one thing to watch out for is that D should always be greater than the maximum negative Z coordinate, otherwise bad things will happen, believe me.

One small problem that arises is that the points we end up with are all centred about the origin (0,0), which on the AMOS screen is in the top left corner of the screen. To display them correctly, we need to move all the points to the real centre of the screen. This is simply done by adding the values of the two variables CX and CY (which are defined at the beginning of the program and hold the coordinates of the centre of the screen) to the coordinates produced by the perspective



With a little practice, you too could be designing complex vector objects such as this house.

transform. In addition, we need to flip the Y axis round – this is done by subtracting all the Y coordinates from the height of the screen.

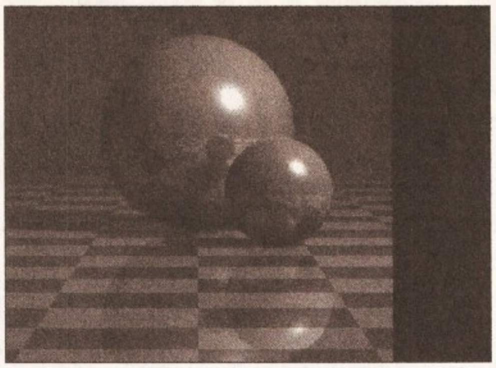
HOW IT WORKS

Most of the real work in the program is performed in the "_DRAWOBJECT" subroutine. It contains two loops. The first loop goes through each of the points that make up the object. It rotates each point around each axis by the current angles, performs the perspective transformation, and then stores the resulting two-dimensional points in the array P (Perspective). The second loop draws the object. It goes through each of the lines defined in the L array, drawing the lines between the start and end points, finding the screen coordinates of the transformed points from the P array.

AMOS veterans will also notice that the screen is double buffered. For less experienced AMOS users, the theory of double buffering is explained quite nicely in the AMOS manual, but basically it prevents us from seeing the screen whilst the computer is drawing the next frame. If you'd like to see the difference it makes, try commenting out the line after the screen is opened that begins "Double Buffer", and the line that begins "Screen Swap" in the loop. Flickery, isn't it?

You should find that the program runs at quite a reasonable speed, despite the fact that it uses floating point numbers for most of the calculations. AMOS users lucky enough to own the compiler will find that once compiled the program runs much more smoothly. There are many other ways in which the program could be optimised. You might like to try using integers (whole numbers) rather than floating point variables, or using pre-computed look-up tables to obtain the Sin and Cos values.

As it stands, the program given in the listing allows you to rotate the cube around the X and Y axes using the mouse. When you run the program, move the mouse to the centre of the screen. You should then find that slowly moving the mouse around causes the object to rotate in quite an intuitive manner. In fact, the mouse X position is used to determine the rotation around the Y axis, and the Y position determines the rotation around the X axis. You might like to try adding the ability to rotate the object around the Z axis when you hold down a mouse button.



Is it really possible to create graphics like this in AMOS? Yes! This image was created by my own ray tracer, written in BASIC.

If you'd prefer to see the object moving without any interaction whatsoever from the user, simply remove the first two lines in the loop, which deal with the mouse control, and replace them with something like:

```
Add XANGLE,5,0 TO 359 Add YANGLE,3,0 TO 359 Add
ZANGLE,2,0 TO 359
```

This *should* make the object happily tumble around all by itself, just like in all those truly strange European demos.

DIY 3D

Once you've typed in the listing and got the program to work, you can start designing your own 3D objects. I've found that the easiest way to do this is to design your object on graph paper first, starting with a rough outline and then adding details later. Popular subjects include geometric solids, everyday objects, buildings and logos.

Once you've worked out all the coordinates and lines, you can enter the data straight into the program and see what it looks like. If your object becomes too complicated for AMOS to draw in real time, you could try altering the program to make it save out each frame as an IFF picture. These can then be loaded into *Deluxe Paint* and animated at full speed. Have fun!

STORMY PLASMA CLOUDS

I have heard from several people who have been having problems with the fractal plasma clouds program from the July issue (see page 60 for information on how to order your back issues). I am glad to say that on the whole these problems were caused by a slight typo in the listing. There should have been one of those cute little hand symbols after the word "Procedure" at the top of the second column. The complete line should therefore read "Procedure FRAC[X,Y,S]". If you still have problems you might be interested to hear that the complete, working code should soon be available, along with all the other listings, on our new subscribers' disk, so now is the time to start subscribing.

NEXT MONTH

Next month Simon shows you how to extend the program to produce a real-time virtual reality rendering engine, complete with Gouraud shading and anti-aliased texture mapping. Yeah, right. AS

LISTING: SIMPLE WIREFRAME 3D GRAPHICS

```
' Simple Wireframe 3D Graphics
' Simon Green, 1994
'
Screen Open 0,320,256,2,Lowres
Curs Off : Palette $0,$F0
Double Buffer : Autoback 0
'
NUMPOINTS=8 : Rem Number of vertices
NUMLINES=12 : Rem Number of lines
'
Dim V(NUMPOINTS,3) : Rem Vertices
Dim P(NUMPOINTS,2) : Rem Perspective points
Dim L(NUMLINES,2) : Rem  Lines
'
Gosub CREATE_OBJECT
'
' Screen centre
CX=Screen Width/2 : CY=Screen Height/2
' Viewpoint distance from origin
DIST=300
'
Degree
' Rotation angles
XANGLE=0 : YANGLE=0 : ZANGLE=0
'
Do
  YANGLE=X Screen(X Mouse)-CX
  XANGLE=Y Screen(Y Mouse)-CY
  Cls
  Print "x:";XANGLE
  Print "y:";YANGLE
  Print "z:";ZANGLE
  Gosub _DRAWOBJECT
  Screen Swap : Wait Vbl
Loop
'
'
_DRAWOBJECT:
' Calculate Sin and Cos of each rotation angle
XSIN#=Sin(XANGLE) : XCOS#=Cos(XANGLE)
YSIN#=Sin(YANGLE) : YCOS#=Cos(YANGLE)
ZSIN#=Sin(ZANGLE) : ZCOS#=Cos(ZANGLE)
'
' Rotate each point and put in perspective
For N=1 To NUMPOINTS
  X#=V(N,1)
  Y#=V(N,2)
  Z#=V(N,3)
  '
  ' X rotation
  X1#=X#
  Y1#=Y#*XCOS#+Z#*XSIN#
  Z1#=Z#*XCOS#-Y#*XSIN#
  '
  ' Y rotation
  X2#=X1#*YCOS#-Z1#*YSIN#
  Y2#=Y1#
  Z2#=X1#*YSIN#+Z1#*YCOS#
  '
  ' Z rotation
  X3#=X2#*ZCOS#-Y2#*ZSIN#
  Y3#=X2#*ZSIN#+Y2#*ZCOS#
  Z3#=Z2#
  '
  ' Perspective transformation
  F#=DIST/(Z3#+DIST)
  P(N,1)=(X3#*F#)+CX
  P(N,2)=Screen Height-((Y3#*F#)+CY)
Next
'
' Draw lines between points
For N=1 To NUMLINES
  Draw P(L(N,1),1),P(L(N,1),2) To
P(L(N,2),1),P(L(N,2),2)
Next
Return
'
'
CREATE_OBJECT:
' Read object data into arrays
Restore VERTICES
For N=1 To NUMPOINTS
  Read V(N,1),V(N,2),V(N,3)
Next
'
Restore LINES
For N=1 To NUMLINES
  Read L(N,1),L(N,2)
Next
Return
'
' Object data
VERTICES:
Data -50,50,-50
Data 50,50,-50
Data 50,-50,-50
Data -50,-50,-50
Data -50,50,50
Data 50,50,50
Data 50,-50,50
Data -50,-50,50
'
LINES:
Data 1,2
Data 2,3
Data 3,4
Data 4,1
'
Data 5,6
Data 6,7
Data 7,8
Data 8,5
'
Data 1,5
Data 2,6
Data 3,7
Data 4,8
```

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Bournemouth Bournemouth Amiga Club. Contact P Chamberlain ☎ 0202 296714.

Bristol Avon Micro Computer Club. Contact Roger or Bob ☎ or Fax 0272 311642.

Bristol Bristol Amiga Club. Contact 3 Parkstone Avenue, Horfield, Bristol BS7 0BX.

Bristol EmuSoft. Contact Nalpex, 48 Longhandstones, Cadbury Heath, Bristol BS15 5AP.

Bristol Game Swap Club. Contact Ade Ajidahun ☎ 0272 240399

Dukinfield C.C. Swapshop. Contact Tom Hampson ☎ 061 339 9488.

Exeter Exeter 16-bit User Group. Contact Andrew Deeley/Phil Treby at 25A Gloucestershire Rd, Exwick, Exeter, EX4 2EF.

London PD for beginners. contact M.Macias 071/924/5528 before 6pm. 14 Totteridge House, 15 Yelverton Rd, London ,SW11 3QQ.

Reading Charlies PD. Contact Charles Read, 10 The Cedars, Tilehurst, Reading, Berks RG3 6JW.

Salisbury CHUD. Contact Mr M Sellars ☎ 0980 33154.

Taunton Imagine Object Makers. Contact Charles Mo, 16 Calder Crescent, Taunton, Somerset TA1 2NH.

Torquay Ami-Info. Contact Paul Caparn, Homeside, Higher Warberry Road, Torquay, Devon TQ1 1SF.

MIDLANDS

Birmingham 68000 in Birmingham. Contact Mike Bedford–White, 16 Westfield Rd. Acocks Green, B'ham B27 7TL.

Birmingham Software Exchange Service. Contact Michael Pun ☎ 021 459 7576.

Coventry Coventry and Warks Commodore Computer Club. Contact Will Light ☎ 0203 413511.

Derby Living Poets Society. Publication and appraisal of creative writing. Sean Woodward. Fido 2: ☎ 2503/104; 11. Menin Road, Allestree, Derby,DE22 ZNL, UK.

Hereford Hereford Amiga Group Help. Contact John Macdonald ☎ 0981 21414.

Loughborough Leicestershire Amiga Users. contact Daruis (0533) 375147, P.O. Box 10, Mountsorrel, Loughborough, Leicestershire, LE12 7ZZ.

Loughborough BR & CJ Computer Club. Contact B Robinson ☎ 0392 72889 or ☎ 03922 841296.

Melton Mowbray Melton Amiga Users. Contact Stephen Mowbray ☎ 0664 63421.

Nottingham East Midlands Amiga User Group. Contact Richard Haythorn ☎ 0602 298075.

Solihull Deluxe Cheats Disk User Group. Contact Steven Frew, 96 Campden Green, Solihull, West Midlands B92 8HG.

Solihull Sid The Kid Amiga. Contact Sid Reeves, ☎ 021 705 8619.

Solihull Solihull Computer Users Group. Contact Rich or Lee, 41 Leafield Road, Solihull, W. Midlands B92 8NZ.

Stoke-on-Trent ANDY PD contact Andrew Shufflebotham (0782) 775014, 2 Sussex Drive, Kidsgrove, StokeonTrent, Staffs, ST7 1HG.

Sutton-on-Sea Aden PD. Contact Den Rounding, 8 Primrose Lane, Miami Beach, Trusthorpe Road, Sutton-on-Sea, Lincolnshire LN12 2JZ.

Telford Shropshire Amiga Link. Contact N Cockayne ☎ 0952 591376.

Telford West Midlands Amiga Club. Contact Kevin Genner Telford Snooker Centre, Canongate, Oakengates, Telford, Shropshire.

Witney Cacophony (Unlimited). Contact Mark Wickson, 49 Perrott Close, North Leigh, Witney, Oxon OX8 6RU.

NORTHEAST

Balby Warpdrive. Contact B Scales ☎ 0302 859715.

Barnard Castle Amiga Users' Club. Contact Paul Kellett 67 Green Lane, Barnard Castle, County Durham DL12 8LF

Barnsley Amiga Programmers' User Group. Contact Andrew Postill, 2 Selby Road, Newlodge, Barnsley, South Yorkshire S71 1TA.

Catterick Champion PD Club. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire DL9 3HE.

Chester-le-Street Chester-le-Street 16-Bit Computer Club. Contact Peter Mears ☎ 091 385 2939.

Darlington Darlington Commodore Users Club. Contact Steve Wheatley, 1 Ruby St, Darlington, Co Durham DL3 0EN.

Darlington Jemsoft Amiga Users. Contact Danwood, 3 Cavendish Drive, Darlington, Co Durham DL1 2GQ.

Darlington Northern Amiga Users Group. Contact Membership Secretary, PO Box 151, Darlington, County Durham DL3 8YT.

Durham The Amiga Club. Contact G Starling, 31 Pine Lea, Brandon, Durham DH7 8SR.

Harrogate Club 68000. Contact Chris Hughes ☎ 0423 891910.

Houghton-le-Spring Club Amiga. Contact Chris Longley, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear.

Keighley Pennine Amiga Club. Contact Neville Armstrong ☎ 0535 609263.

Mickley Nothing But AMOS Monthly disk magazine. Contact Neil Wright ☎ 0661 842292.

North Berwick East Lothian Amiga Group. Contact Mr J Curry ☎ 0620 2173.

Otely Harley's PD Swaperama. Contact G Varney ☎ 0943 466896.

Rotherham Software City. Contact N Richards ☎ 0709 526092.

Sheffield Steel PD. Contact James Whitehead, 33 Middle Cliffe, Drive Crowedge, Sheffield S30 5HB.

Spalding TDM. Contact Gedney Marsh, Spalding, Lincolnshire.

Stocksfield Blitz User Group. contact Neil Wright, 39 Riding Dene, Mickley Square, Stocksfield, Northumberland, NE43 7DL.

Sunderland Blitter. Contact Philip Kruman, 213 Fordfield Rd, Sunderland SR4 0HF.

Sutton-on-Sea Aden PD Club. Contact Den Rounding, 8 Primrose Lane, Miami Beach, Trusthorpe Road, Sutton-on-sea, Lincs LN12 2J2.

Tunstall The Amiga Studio. Contact Dave Rose ☎ 0782 815589.

Washington Mainly Amiga. Contact Ray Scott ☎ 416 9189.

Whiteley Bay Club Futura. Contact G Holland, 16 Hermiston, Monkseaton, Whitley Bay, Tyne and Wear NE25 9AN.

NORTHWEST

Accrington New Hall Amiga Users Club. Contact Bill Grundy ☎ 0254 385365.

Blackburn Blackburn Amiga Users Group. Contact Eric Hayes ☎ 0254 675625.

Blackpool Channel Z Diskmag. Contact Darren Busby, 3 Edelston Rd, Blackpool FY1 3HN.

Fleetwood Fylde Computer Club. Contact Colin Biss ☎ 0253 772502.

Lytham St Annes Amiga Users Group Part 2. Contact Andy Wilkinson ☎ 0253 724607.

Oswaldtwistle Hyndburn Amiga Users Club. Contact Nigel Rigby ☎ 0254 395289.

Skelmersdale Computeque. Contact Steve Lalley ☎ 0695 31378.

Stamford Under 18 Only. Contact Joe Locker ☎ 0780 64388

SCOTLAND

Angus Angus Amiga CDTV club. Contact J Robertson ☎ 0356 623072.

Bathgate Lothian Amiga Users Group. Contact Andrew Mackie, 52 Birniehill Ave, Bathgate, W Lothian EH48 2RR.

Cowdenbeatrh Amiga FX. Contact Ryan Dow ☎ 0383 511 258.

Dundee Tay-Soft PD Club. Contact Dave Thornton ☎ 0382 505437.

Dunfermline Dunfermline Sound & Vision Club. Contact Stan Reed, 7 Maxton Place, Rosyth, Dunfermline, Fife KY11 2DG.

East Lothian Amiga Club (every 2nd week). Derek Scott ☎ 0620 823137, (Saturday 1 – 4pm). Bridge Centre, Poldrate, Haddington, East Lothian, Scotland.

Edinburgh Edinburgh Amiga Club. Contact Stephen Fradley ☎ 031 555 1142.

Edinburgh Edinburgh Amiga Group. Contact Neil McRea, 37 Kingsknowe Road North, Edinburgh EH14 2DE.

Glasgow Amiga Helpline. Contact Gordon Keenan, Amiga Helpline, 6 Skirsa Square, Glasgow G23.

Hawick Borders Teri Odin BBS. Derek Scott, 0450 373071. 26d Harden Place, Hawick, Borders, Scotland.

Inverness Highland PD.Contact David Paulin ☎ 0463 242431.)

Johnstone Using AMOS. Contact Colin McAllister ☎ 0505 331342.

Perth Perth and District Amateur Computer Society. Contact Alastair MacPherson 137 Glasgow Rd, Perth.

Redburn Redburn Computer Users Group. Contact Ruby Anderson ☎ 0294 313624.

WALES

Bangor Amiga Maniacs. Contact Johnny, 8 Tan-y-Grais, Caernarfon Rd, Bangor LL57 4SD.

Carmarthen Bloomfield Video and Computing. Contact Mrs Beryl Hughes ☎ 0267 237522.

Clwyd ShieldSoft PD. Write to 26 Doren Avenue, Rhyl, Clwyd LL18 4LE, ☎ 0745 134 3044.

Clwyd Solo (Amiga). Contact Mike, 26 Doren Avenue, Rhyl, Clwyd LU8 4LE. ☎ 0745 343044

Neath Amiga Navigation. Contact Dave Thomas 4a, Allister St, Neath, W Glamorgan.)

Powys Blue Bedlam. Contact Michael Grant ☎ 0873 811791.

N IRELAND

N Ireland N. Ireland Amiga User. Contact Stephen Hamer, 98 Crebilly Rd, Ballymena, Co Antrim BT42 4DS.

N Ireland Digital Intensity (diskmag). Contact Simon Denvir, 40 Old Cave Hill Rd, Belfast BT15 5GT.

SPECIAL INTERESTS, BBSs

Amiga Buzz BBS. Contact

David Clift on ☎ 0924 491 461.

Amiga Sports Fans. Contact Jamie Last, York House, Church Road, Elmswell, Bury St Edmunds, Suffolk, IP30 9DY.

Angus Amiga Musicians Club. Contact Gavin Wylie, Guthrie Street, Carnoustie, Angus.

Animeiga UK BBS Contact Chris Payne ☎ 0462 484 752 . 2400_14400 V32bis 8n1 24 hours a day/7 days a week.

Avenger BBS, Lincolnshire based board, opening times: Weekends 9pm 12am upto 14400 baud, Data (0507) 568318.

Basingstoke AMOS Programmers Exchange. Contact J Lanng, 7 Majestic Rd, Hatch Warren, Basingstoke, Hants RG22 4XD.

Bidwell BBS. Contact SYSOP Mark Lunt Modem ☎ 0582 863 906.

Birmingham The Junction Box BBS. Contact mark Pegler ☎ 021 321 2235.

Borders Teri-Odin BBS. Contact Derek Scott ☎ 0450 373 071.

Branston Fen Amiga Boatowners. Contact D Beet Lock, Branston Fen, Lincolnshire LN3 5UN.

Braunston Nr Daventry GFA Basic Forum. Contact J Findlay ☎ 0788 891197

Braunston, Nr Daventry Amiga E Support Group. Contact John Findlay ☎ 0788 891197.

Broadstairs AMOS Programmer Club. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS.

Chelmsford Independent Commodore Products Users Group. Contact David Elliott ☎ 0245 328 737

Chiltern Amigas BBS, contact Commodore Specialists (0296) 87522 . 14400BPS, 37 Plough Close, Aylesbury, Bucks, HP21 9AD.

Cumbria (Barrow-in-Furness) The Power Plant BBS. Contact Neal Postlethwaite ☎ 0229 431590.

Dark Solution BBS. Sysop Andy Miller (0246) 277317. 24 hours a day,(300 14400 Bps). friendly sysop Loads of files.

Den's Den BBS. contact Sysop Dennis Luckett (0702) 464818, SouthendonSea, Essex.

Glasgow 24-bit Club. Contact Gordon Keenan, 24-bit Club, 6 Skirsa Square, Floor 1, Glasgow G23.

Glasgow Action Replay Users Club. Contact Gordon Hagan, 66 Muirside Avenue, Kirkintilloch, Glasgow G66 3PR.

Guru Meditation BBS.24 hours. contact Steve Harris, voice 081/661/9524. BBS +44 (0) 81 401 12502.

Highfields CDTV User Group. Contact Gary Ogden, ☎ 0785 227059.

Highlander BBS. Contact Alan Walker, Mark Price ☎ 0452 384702 & ☎ 0452 384557.

Impulse BBS. Contact James Norris ☎ 081 698 8978.

Lingfield In Touch Amiga. Contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ.

Liverpool Nickelodeon BBS. Contact SYSOPS Mark Williams, Tony Ross ☎ 051 709 8508 (Liverpool).

London (Richmond) Micro Academy. Contact Don Pavey ☎ 081 878 1075.

London Independent Commodore Products Users Group. Contact the Membership Secretary (Fax 081 651 3428). ☎ 081 651 5436

London On-Line Network BBS. Contact ☎ 081 539 6763 (London).

Look Northwest BBS. Contact ☎ 0282 698380 or 0282 619518.

Lothian Independent Commodore Products Users Group. Contact David Hope ☎ 0555 811 955..

Macclesfield Independent Commodore Products Users Group. Contact Peter Richardson ☎ 0298 23644

Maidenhead Independent Commodore Products Users Group. Contact Mike Hatt ☎ 0753 645 728.

Manchester CDTV Users Club. Contact Julian Lavanini, 113 Fouracres Rd, Newall Green, Manchester M23 8ES.

New Whittington Digital Music Club. Contact Roger Hunt ☎ 0246 454280.

Normanton BASIC Programmers' Group. ContactMark Blackall ☎ 0924 892106.

Plymouth Pilgrims BBS. Contact Jon Wickett ☎ 0752 366 939.

Rochford Ray Tracers. Contact Neil Hallam, 12 Meesons Mead, Rochford, Essex SS4 1RN.

Romford Phoenix Demo. Contact Frank ☎ 081 597 4661.

Rotherham Marksman (Trojan Phazer user group). Contact David Green, 67 Thicket Drive, Maltby, Rotherham, S Yorkshire S66 7LB.

Solent Independent Commodore Products Users Group. Contact Anthony Dimmer ☎ 0705 254969

South East Independent Commodore Products Users Group. Contact Len Beard ☎ 0689 830 934.

South Mostly Harmugs BBS. Contact Lee Sanders ☎ 0705 614 824.

South Wales Independent Commodore Products Users Group. Contact Mike Bailey ☎ 0446 775287

Stevenage Independent Commodore Products Users Group. Contact Brian Grainger ☎ 0438 727925

Stoke-on-Trent Independent Commodore Products Users Group. Contact David Rose ☎ 0782 815589.

Swindon Amiga Video Producers' Group. Contact J Strutton ☎ 0793 870667 before 9pm.

Swindon MUG – MED Users Group. Contact Richard Bannister, 6 Glevum Rd, Stratton St Margaret, Swindon SN3 4AF.

Sysop Auto Pilot BBS. New BBS, Amiga only. Wednesday Evenings from 7pm, all weekend. Generous ratio's for first 50 callers! Sysop, Gavin Dolphin, ☎ 0332 660768.

Sysop Frontier, Mathew Recardo. ☎ 0527 597531.

System One BBS. Contact ☎ 0743 791501.

The Cartoon BBS. Contact the Bartman ☎ 071 635 0592.

The Loft BBS. contact sysop crispy (24 hours, 14.4k) (0203) 545320.

The Neutral Zone (star trek BBS). contact Arklight or GulDucat, Dunstable (0582) 475032.

The Power Station BBS. contact Sysop Alan Maylin & Neil Barrett, BBS (0375)640507.

Thetford CD BBS. Contact Paul Morris ☎ 0842 763639.

Trick or Treat II BBS. Contact Mark Meaney ☎ 0703 391 797.

Wallington Bible Bureau.Contact AD ☎ 081 669 7485.

Ware Gamer-Link. Contact Stu, 28 Churchfield, Ware, Herts SG12 0EP.

Warlock BBS. Contact Mr Manglin ☎ 031 659 5806

Warrington The CDTV Revolution. Contact Lee Beckett ☎ 0925 268819.

West Riding Independent Commodore Products Users Group. Contact Kevin Morton ☎ 0532 537318

Wigan Independent Commodore Products Users Group. Contact Brian Caswell ☎ 0942 213402

Witham Video Visuals. Contact Chris Brown, 4 Lavender Close, Witham, Essex CM8 2YG.

Witzend BBS. Contact Darron Fooks (0702) 470 469, 109A Leigh Hall Rd, Leigh on Sea, Essex.

Workington AMOS Programmers Group. Contact John Mullen at 62 Lonssdale St, Workington, Cumbria CA14 2YD.

Worlingham Sliver BBS (10pm - 3am). Mat Tillett, 0502 715296. 27 Hillside Avenue, Worlingham, Beccles, NR34 7AJ.

OVERSEAS

Australia Amiga Users Group of Western Australia. Contact Bill Sharpe-Smith PO Box 595, Cloverdale WA 6105 Australia.

Australia Comp-U-Pal. Contact Comp-U-Pal, 116 Macarthur Street, Sale, Victoria 3850, Australia.

Belgium AUGFL vzw. Contact Lieven Lema, Meesberg 13, 3220 Holsbeek, Belgium.

Denmark Danish AMOS user group. Contact Tom Poulsen, DABG, postbox 127, 2640 Hedehusene, DK Denmark.

France 16-32 Micro. Contact F Moreau, 132 rue Jean Follain, 50000 Saint-Lo, France ☎ 315220 02.

France Maritime Amiga Club. Contact CDR K Osei, GN Ships Refit Office, 51 Rue de la Bretonniere, 50105 Cherbourg, France. ☎ 33 33225447.

Germany Royal Air Force Amiga Club. Contact Stan Young, HMF RAF Laarbruch, BFPO 43.

Germany Worldwide PD Club. Contact Dave White, Berliner Strasse 39, 40880 Ratingen, Germany ☎ 02102 499729 (Germany).

Gibraltar Gibraltar Amiga Users Club. Contact David Winder, 7 Lime Tree Lodge, Montagu Gardens, Gibraltar ☎ 010 350 79918.

Greece Amiga Athens club. Contact Stefanos Papamichael, 9 Derfeld Rd, Patisia, 11144 Athens, Greece ☎ 01/2027973.

Greece Amiga Pros User Group Greece. Contact Stefanos Siopoulos, 52 Silivrias Str., N. Smyrni 17123, Athens, Greece, ☎ 01/9349963.

India Indian Amiga Friends. Contact Bilal, 46 Paragon 405 Lokhandwaza Complex, Andheri (W), Bombay-400058.

Ireland Amiga Addicts. For info SAE to A Minnock, Clonkelly, Binn, Co Offaly, Ireland.

Ireland AMOS Users.Contact Brian Bell, 8 Magnolia Park, Dunmurry, Belfast BT17 0DS.

Ireland City Centre Amiga Group. Contact Patrick Chapman, 70 Ballygall Crescent, Finglas East, Dublin II, Ireland, ☎ 345035.

Ireland CUGI Commodore Users Group of Ireland. Contact Geoffrey Reeves, c/o St Andrew's College, Booterstown Avenue, Blackrock, Co Dublin. ☎ +353 1 288 3863.

Ireland Navan Computer Club. Contact Mark Arnold, Cannistown, Navan, Co Meath, Eire ☎ 046 21078.

Ireland Northside Amiga Group. Contact William Kelling, 10/A Rainsford Avenue, Dublin 8, Ireland ☎ 01 532 807.

Ireland Software Exchange Club. Contact Michael Lacey, Fern's Post Office, Enniscorthy, Co. Wexford, Republic of Ireland.

Malta HTS (Malta). Contact K Cassar, Block 1 Flat, 6 H E Hal-Tmiem, Zejtun ZTN07 Malta ☎ 674023.

Malta Malta Amiga Club. Contact Zappor, PO Box 39, St Julians, Malta, ☎ 440453

Portugal Software Asylum. Sid Sanches, Portugal ☎ 062 831566. Apartado 6156, 3000 Coimbra, Portugal.

Singapore Singapore Sling. Contact Eric Chai ML, Block 4 #14-413, Pandan Valley, Singapore 2159, ☎ 65 4680630.

South Africa Amiga Users Exchange (AUX). Contact Ken Turner, 24 Du Plessis Avenue, Edgemead, 7441 Cape Town, S. Africa. Internet: kturner@aztec.co.za

Sweden 32-bit ware. Contact 32-bit ware, Ekorrstigen 10, 147 63 Tumba, Sweden.

USA Japan Amiga Group.Contact: Rick Gardaya, PSC 78 Box 3876, APO AP 96326 USA.

Note: this list is provided as a free service for amateur, non-profit-making user groups. Amiga Shopper does not endorse or recommend any particular group and cannot be held responsible for any possible losses.

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WISE WORDS

£25 WINNER

I am writing to congratulate you on your excellent Word Processor round-up in the July issue, and also to give some advice to anyone who may find it useful.

In your round-up you mentioned that the only WPs capable of working with parallel, as opposed to snaking, columns were New Horizon's *Prowrite* and Arnor's *Protext* and that this was a notable omission from *Final Writer*. However, I have found a way to simulate the same effect using *Final Writer*, and probably other WPs as well, using TABs, which I only learned how to use properly through your general word-processing article. This will only work if the character name in the left hand column is only one line long, as long as there are only two columns, and is achieved as follows:

- **Set up any document with one column.**
- **Decide how wide the left hand column for character names should be, and set up a left-flush tab this distance from the side of the page.**
- **Now, in *Final Writer's* "Layout/Paragraph" menu, enter the same margin in the "Indents/Left" box, (this will need adjusting if your page does not start at 0 on the ruler, but only needs setting up once) making sure that the "Indent/First" box value is set to 0.**
- **You are now ready to start typing, with the exception that you must use the TAB key to move from character name to main text "columns", and the Return key to get to the next character name "column".**

I hope some readers may find this of use as it provides a relatively simple solution to the problem, as long as the flexibility required is not too great.

I was glad to see that you have once again given us a proper review of the products, rather than simply the general impressions often found in other magazines, and that the emphasis in the comparison was placed on functionality and usability rather than gimmicky features, such as *Wordworth 3's* "Text Effects", clever as they may be. Keep up the good work!

Richard Munro
Godalming

Thanks for the tip and thanks for your kind words (no pun intended) on our word processor round-up. You can expect to see many more articles of this type in forthcoming issues covering subjects as diverse as accelerators, modems, programming languages, etcetera...

EDITING EDICTS

I read with interest your article on word processors. Although you mentioned two shareware WP, there is one that I use quite a lot called *Textengine V4.1* by Nicholas Harvey which I find very useful.

It is admittedly a basic WP, complete with a dictionary I hasten to add, but I would have thought a brief mention could have been put in, if only to let others know that there are cheaper WPs around. This one cost me about a fiver.

Jim Wilkins
I.O.W.

I bought my Amiga around the time *Amiga Shopper* was first published and have been a fan of yours since that May 1991 issue, grateful for the tuition I have received through your pages. The effect of your advice over the years is apparent – GVP hard disk, upgrading WB, 1Mb of chip RAM after wading in with a Kraft knife and soldering iron – all sound advice, but some of it not for the faint-hearted. This time I have beaten you to the post and upgraded to *Final Writer* just before your July article, so it's nice to read that I made the right choice.

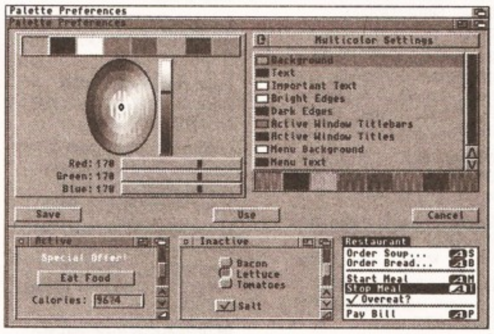
But – I think it was most unfair on Martin Reddy to use his *EdWord Pro 4.1* as one of the comparisons against the giants of Amiga word processing. I use a text editor to adjust Postscript output from "The Copyist" and graduated to Pro 4.1 through your cover disk. After using *Memacs*, *EdWord* is a nice surprise – friendly, fast and easy on the eye. It does not compare with *Final Writer* or *Wordworth* and, I'm sure, was never intended to be used as such. The name? Well it is a text editor. How final is *Final Writer*, and the worth of words isn't in the programme! *EdProg*? ugh!! I reckon for £10 it's next to "Post" as value for money.

Stuart Hall
West Sussex.

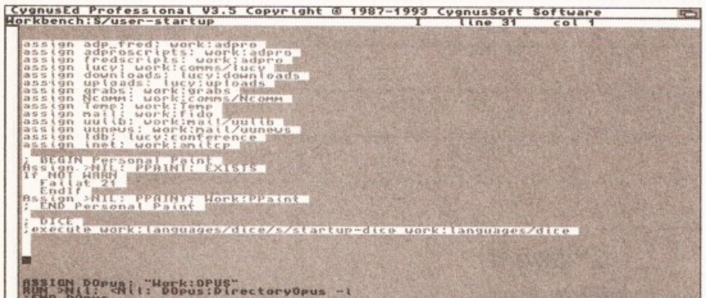
Thanks for those kind words. It's always reassuring in the magazine business to hear that somebody has benefited from the advice and information that's in this magazine. As you say, some of the projects that we have printed in the past have certainly not been for those who are scared to dig into the innards of their machine. Despite this, there are still a number of areas which we haven't covered, so stay tuned for further developments.

I've not used the *EdWord* program you mention, but I know there are a variety of text processors available as PD or shareware (such as *GoldEd* or *Jade*) which are extremely powerful tools for doing unspeakable things to bits of text. And long may they continue!

The real thing which came out of our Word Processor roundup, in my opinion, was that you should think about what exactly you want to do with it before making any decision. If you want to deal with raw text, you should consider a program such as ProText (although I find its non-standard printer drivers a real pain). If you want to do all sorts of weird and wonderful things with your text, then you should consider a program such as *Wordworth* or *Final Writer*.



Should users still be using Workbench 1.3 or should they be moving on to Workbench 3? See "WAILING WORKBENCH".



What's the difference between a Word Processor and a Text Editor such as Cygnus Ed (shown above)? See "EDITING EDICTS".

CARING COMMODORE

The A500 was a breakthrough in modern computer technology and boasted many exciting

things. A decade on and it hasn't really changed all that much. Its operating system is still a joy to use, but the PC has firmly made its mark on society. Unfortunately the PC is the 'industry standard machine'. Nobody can change that, so I think that Commodore should get their act together. Windows NT compatibility could be good and bad. If it's going to be Windows compatible why not package it with Windows 3.1 and forget Workbench?

On the other hand, it could be developed like the Mac. Although this will defeat the object of the computer being called an Amiga and will take away some of its Amiga magic, it might just save Commodore's bacon. I am as 'anti-PC' as any Amiga owner, but I try not to kid myself that the Amiga could take over the PC. Unless Commodore make their next machine Windows compatible, it won't be a tremendous leap forward; it'll just be a sideways move.

The Amiga could have a PC compatible environment. Why not give your standard Amiga SVGA compatibility? The ability to use PC peripherals (e.g. drives, mice, monitors etc.). On the software side, there could be much more support for PC data formats. How about the likes of *Final Writer* and *Wordworth* reading *Word* documents? More support for PC image formats (e.g. JPEG, PCX, BMP etc.) and a better CrossDOS file transfer system.

Commodore have proved they can put together a good advertising campaign (take the CD32 as an example). Bundle a great computer with features that a PC owner won't be able to moan about and increased sales might begin to turn software manufacturers' heads.

Commodore can sit around feeling sorry for themselves all they like, and we can sympathise and give them a hanky, but when it comes down to it, it's only they who can make the difference.

Philip Welch
Crewe

I think that no new machine is going to save Commodore's bacon, as this now appears to be well and truly cooked. Although Windows NT (New Technology) compatibility does have its advantages, there are also many drawbacks. Most PC users are now beginning to realise that NT is not a realistic option for their machines; it simply requires too much in terms of memory, disk space and raw computing power. An Amiga capable of running Windows NT would have to have at least 12Mb of memory and over 100Mb of disk space.

SUPERCOMPUTER SUGGESTIONS

On the subject of the much rumoured Super Amiga with all this Windows NT compatibility etc., what's wrong with that? As long as the machine retains the Amiga front end, which we all know and love, then I can't see a problem. Windows is only a bolt on environment (and it shows), unlike Workbench which is an integral part of the machine. As long as some backward compatibility is maintained, I think it can only help the Amiga to survive. I use 486s at college (studying to be a computer technician) and know the Amiga is a much more versatile piece of kit and has much better compatibility with its predecessors than PCs ever will.

Has anyone noticed how Apples, Amigas and PCs seem to be converging towards a sort of mutual, universal architecture, from a software/operating system/video requirements angle? As the various "electronic engines"of our collective computers get ever more quick and powerful, the actual heart of the machine is becoming less relevant with respect to the "operating end".

In the not too distant future I think we will eventually see a few manufacturers offering us a vast range of computers which will possess a universal WIMP type environment, capable of running any software you wish to throw at it, regardless of the internal processor and custom chips contained within, purely because the technology will be able to emulate any system variations there may be. Any manufacturer deviating too far from this "standard" would be inspecting their own demise. Some of you will be saying that this is a similar concept to the ideals of the long gone MSX machines but I think that next time around things may be a little different, mainly for the following reasons:

1. A much larger contingent of consumers are aware of what the technology is capable of and are happy to use it.

2. The consumers themselves will dictate the required "standard" by buying only what they want, not accepting just what is offered, so manufacturers won't decide what the "standard" will be – the consumer will. If the consumer doesn't like what is offered then, it won't be bought and the manufacturer will have a choice to either change the design to suit consumer requirements, or to leave the marketplace.

3. *Big bucks* are involved when Joe Public likes and buys what a manufacturer has to offer (as IBM can confirm) and manufacturers/corporations can't afford costly mistakes – conformity and standardisation are safe... to a degree. Which is why we all seem to be heading towards some sort of PC compatibility at present (come on, they are the prevalent machine). Things will continue to evolve and if a bit of my Amiga is destined to be part of some rumoured hybrid super machine, then so be it – I will be there as well. If not, well it'll depend on what the hybrid can offer compared to my Amiga, what I need from my machine, and, most importantly, what I can afford. But I'll be happy with whatever it is because it'll be what I want. I'd love to read what other readers think of my views.

Andy Cutler
Newton Abbot

Although there have been many attempts to create a standard Graphical User Interface (GUI) for computers, none of these have achieved the complete market dominance you talk about. The closest is Microsoft Windows, and as somebody who used to work on a PC phone support line, I wouldn't wish that on my worst enemy.

The only other (currently available) candidate is Windows NT, but the requirements to run this are simply too high for most users. There are several other possibilities (such as OS/2 and Taligent), but these are not yet available. I really doubt that any one system is ever going to achieve complete dominance of the market (although I'm sure that Microsoft founder Bill Gates would disagree with me on that).

Although Windows NT compatibility (by moving over to a RISC CPU) is the way that future Amigas are likely to go, this is somewhat a risky option. The danger is that the Amiga could become nothing more than another PC clone, and I really don't think that any serious Amiga user would want to see this happen.

WAILING WORKBENCH

I have bought *AS* from the very beginning (way back before time began) and I find it easy and enjoyable to read; however there is one statement that appears regularly that makes me spit blood: "It's time you upgraded to Workbench 2."

Fine and super, brill even, but, as someone who has been trying to do this very thing for nearly a year, let me tell you it's darn near impossible.

When cruising through the various Amiga mags last August, three companies offered either 2.04 or 2.1 upgrade kits; I phoned all three and was told "sorry out of stock, should be in any week now".

I M Emery
Worcester

SADLY SERIOUS

Has anyone else noticed the gradual disappearance of articles, letters and queries concerning the A500, A600 and B2000? The content of most Amiga magazines now concentrates on the A1200, AGA and Workbench 3. Sadly, the more serious users, who are not interested in keeping up with the latest machines on which to play their games, seem to be neglected.

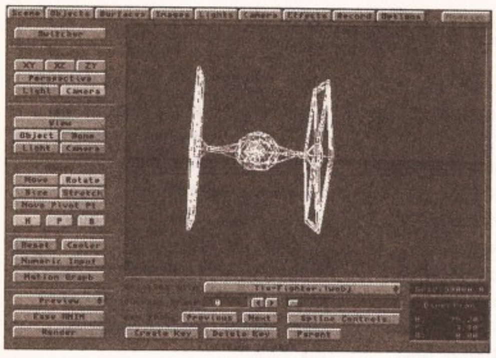
Barry Matthews
Walsall

The simple fact of the matter is that although the A500 & Co. are fine machines, Workbench 1.3 is the problem. I personally own an A3000, and I'm very happy with it. AGA is all very well, but I'm planning to add a 24-bit graphics card soon. We still have a 1.3 Amiga 1500 in our office, and we use this for testing software on. Unfortunately, an increasing percentage of both the commercial and PD software that we get is for Workbench 2 and above only.

Although we will continue to make as much of the magazine as possible relevant to all of our readers, the truth of the matter is that, in a fast moving world like computers, you have to either improve and upgrade things, or get left behind. Very few of the products we review these days could be run on a 1.3 machine, and this certainly isn't for lack of effort to try to get hold of them. They simply aren't being produced these days.

DTP DAWN

Although the Amiga is regarded as little more than a games machine by the uninformed, with recent software titles exploiting the Amiga's potential, it is clear that the future for Amiga owners is brighter than ever before. *PageStream 3*, for example, will take the Amiga into new realms of desktop publishing. The title, as you already know, includes over 50 features that aren't even present in the forthcoming version 3.3 of *Express*, and hundreds more than many other desktop publishing packages on other platforms. *PageStream 3* will firmly establish the



Can programs like Lightwave take the Amiga on to a new level of use? See "DTP DAWN".

Amiga as the leading desktop publishing system.

Another example of high standard Amiga software is *Real 3D*. Version 2.40, for example, is simply the most powerful ray-tracer available. It is at least on par with Silicon Graphics' programs costing thousands. According to Realsoft, version 3 is also planned, and with this, the Amiga will be far and away the leader of the ray-tracing field. And let's not forget *ProVector 3, ADPro 2.5, TV Paint 2, Brilliance 2, Bars and Pipes Professional, Image FX 2, MorphPlus, Lightwave* and the up and coming *Final Writer 3*.

And another thing... what have most of these programs got in common? That's right, they adhere to Commodore's Workbench guidelines, and seeing that Workbench is the most powerful operating system available (easily outperforming Windows on the PC and System 7 on the Mac), these titles guarantee an incredibly versatile and user-friendly environment.

If we're being honest, it's clear that the tables have turned. PC owners have recently taken a huge interest (to describe it lightly) in *Doom* and similar titles. While the PC is becoming increasingly popular with the games fanatics, professionals and serious enthusiasts are realising the benefits of using the Amiga. I even know of many PC users who are switching to the Amiga. Basically what I'm trying to say is that the PC is, in comparison with the Amiga, just a games machine that can word process.

Nathan White
Walsall

With programs like *Lightwave* and *Real 3D*, it's no surprise that the Amiga has made such inroads into the 3D graphics world. After all, in price/performance terms, an Amiga running *Lightwave* or *Real 3D* easily outperforms a PC or a Mac. In terms of DTP, the Amiga is still somewhat behind the Mac in terms of popularity, but if *Pagestream 3* delivers what it promises, we could be looking at a serious challenge...

KIBBLED KEYBOARD

Just a line to say thanks for all you've done so far, and to ask you to keep going. You could always swing round a bit more towards programming in C. Entry level K & R stuff, and also separately the extra bits you need to access the Amiga libraries etc.

My second point is a 'helpful hint'. My keyboard suffered a stuck key the other day, so I hunted around for my trusty key puller and graphite grease, Hey Presto! The key puller is made from a 300 ohm twin spade connector (like ones you find on 300 ohm to 75 ohm adaptor for VCRs), with both prongs of each spade crimp connector bent up 1mm at right angles. These can be hooked under the edges of the stuck key, and (on my A1000) used to ease the keypad off. Using a matchstick to put a little graphite grease round the plunger works wonders. Only 80 more to go. I don't know if A500 keys are the same.

John Gray
London

Thanks for the comments. We are always pleased to hear what sort of thing you would like to see in the magazine, so please feel free to write in with any suggestions or comments you may have.

Although your keyboard tip is a good one, you should bear in mind the warranty destroying properties of your suggestion. If you are having a problem with your machine and it's still under guarantee, contact Wang or ICL before opening your machine yourself.

E'S EXCELLENT

I wonder how many other readers were tempted by Jason Hulances' article on Amiga E (*AS 35*). It is now four months since I read the article and I wish to add my endorsement to this excellent language.

At the time I was a competent AMOS coder hoping to develop into assembler or C for added speed, compactness and intuition support. I was fortunate enough to be able to download a copy of Amiga E the same day as reading the article and have not looked back since. I now feel that I am developing true control of my Amiga, with the option to draw from both Assembler and C coding (most of my understanding gleaned from Anders Bjerins' C manual Fred Fish 456-457), but with the advantage of *very* fast compilation times.

I know many readers are hoping to develop their programming skills and I would encourage them to take a look at Amiga E.

David Perks
Stafford

Amiga E is certainly a very powerful and flexible language, and it certainly seems to be building up quite a following amongst Amiga programmers. It's fast, powerful and above all, free. I'm glad to hear that you found our article useful, and you can expect to see others on both E and different languages in the near future, including an *Amiga Shopper* 'Supertest' on programming languages sometime within the next few months.

DEAD DONKEY

I was in my local computer store today, and was naturally talking about Amigas. Then the shop owner said out of the blue: "Who are Commodore? They don't exist". At first we thought he was joking – unfortunately this was not the case. According to him, Commodore had gone bankrupt, in the US, Europe and in the UK. "The factories have stopped making Amigas and when supplies run out, no-one will be able to buy an Amiga," he said with a tome of a PC owner who had won the battle for supremacy. He also said that the new 1200 CD-ROM drive will never be released.

Andrew Smith
Tamworth

There is a simple way to correct this person's error. Take your copies of the last two issues of *Amiga Shopper*, roll them up and gently bash him around the head with them. Perhaps then he will realise that Commodore International are in voluntary liquidation, but Commodore UK and Commodore Germany are still trading as normal. Stocks of the A1200 CD-ROM drive are expected in September.

CURSED COVERDISKS

For the best part of a year each issue of *Amiga Shopper* boasted an excellent coverdisk with everything from PD to fonts – now, all of sudden, you've stopped it. In reply to Tim Chick's letter in June's edition of *AS*, you said this was because "...people who objected to our (coverdisk) did so because of the lack of choice." I have a subscription to the magazine, which means up to twelve months in advance I pay for a magazine, the contents of which I have no choice over! I don't have a musical bone in my body and I don't do Comms (yea man, it's great), but I buy your magazine because it covers the things I am interested in, and I know each issue will contain items of interest. Similarly, I found at least one item of interest or use on each cover disk. Some muppet buying the magazine plus coverdisk to read one article on fly fishing and the Amiga, and then complaining because he didn't need the coverdisk isn't a valid excuse to lose the disk. Please revive the coverdisk.

Neil Mercer
Kent

I don't recall us ever doing an article on fly fishing. Perhaps we could do a round-up of fly fishing simulators... I'm afraid the coverdisk will not be returning, but we will be bringing in another disk (starting with this issue). The disk will be supplied to subscribers (new or old), and will contain *all* of the listings in the magazine, as well as the best of the month's PD and shareware.

Not only will this be a fab disk, but it will also cost you nothing. The cost of subscriptions will remain at their current level of £30 (£27 by direct debit) for 14 issues. Go on, give our subscriptions line a ring on ☎ 0225 822510. You know it makes sense! AS

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AMUSING ACKNOWLEDGMENTS

- Interesting uses for your Amiga
- The future of Commodore and the Amiga
- The dream Operating System
- Why everybody should become a vegetarian
- What we should do with *Amiga Shopper*

DEFECTIVE DISPATCHES

- The Assembler column (next month!)
- My computer is better than your computer
- The cost of subscribing (now sorted out)
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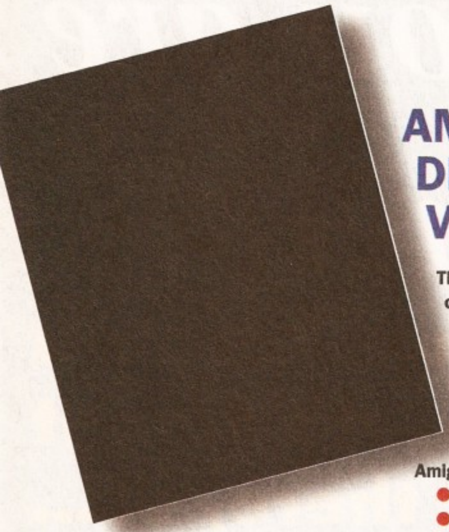
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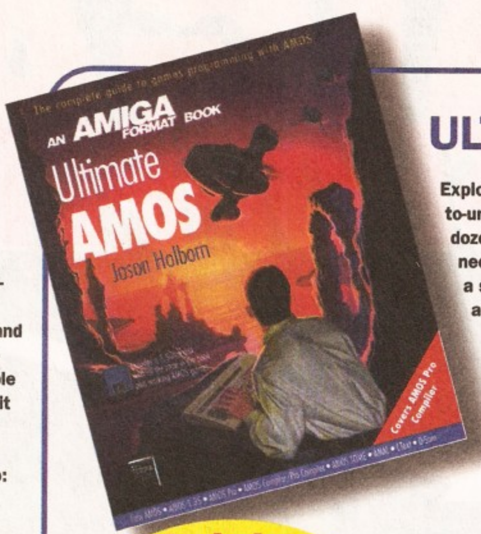
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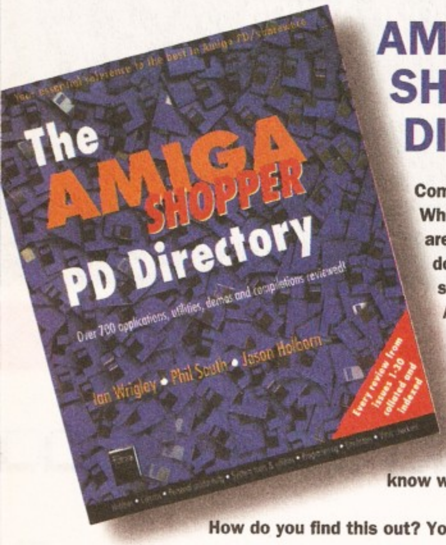
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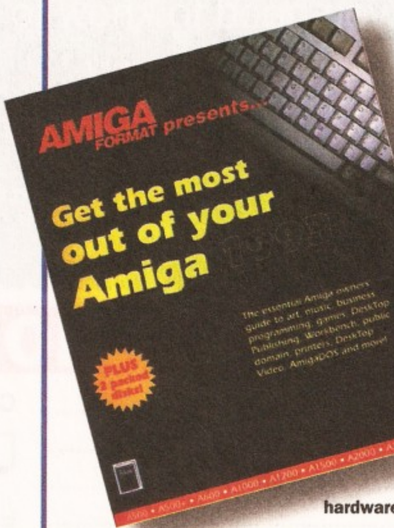
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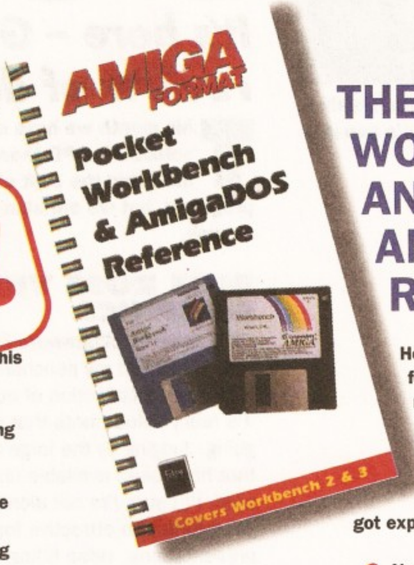
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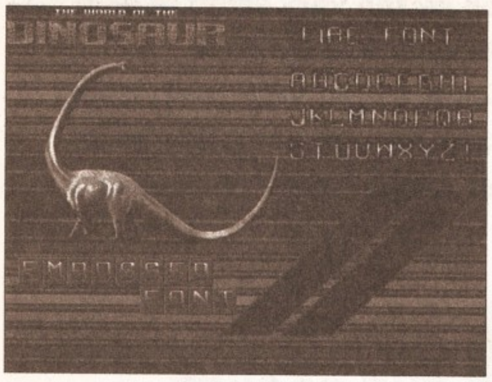
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Here's a selection of the wonderful fonts, brushes and fills that can be found in Blue Rose's two-disk Video and Graphics collection.

SOFTWARE FOR FREE

It's here – Graeme Sandiford's monthly review of dashing and dire PD programs.

This month we have even more of a broad selection of PD than usual. We are still including the best utilities and educational programs, but we are also reviewing animations as well.

BLUE ROSE VIDEO GRAPHICS

Blue Rose PD Shareware Library

I've mentioned my penchant for fonts before, when I reviewed a collection of outline fonts, however, it's really colour fonts that get my saliva glands going. Judging by the large amount of colour fonts that have been available on the Amiga for some time, I'm sure I'm not alone in my appreciation of good fonts. An attractive font can improve presentations, video titling projects and demos.

The Blue Rose PD shareware library has been producing some of the best colour fonts for some time, so I was double-chuffed to receive a copy of their *Video Graphics* collection. This two-disk set comprises several backgrounds and image brushes, as well as a host of high-quality colour fonts. If you boot up from disk A you will be treated to a demonstration of how the fonts, backgrounds and brushes could be put to good use. This little demo was put together using *Scala* and gives you some good ideas on combining the various images in the collection. It also displays the name of the images and fonts, so if one attracts your attention you can easily track it down by using its filename.

The fonts are of the same high standard I've come to expect from Blue Rose. For those of you who are unfamiliar with these types of fonts, I'll briefly explain how they work. They are not really fonts, at least not in the same sense as the ones used by Workbench – they are actually images that have been drawn, mainly, by Eddie Barry in *DPaint*. In order to use them you will need to load them into a paint program and then cut and paste each letter until you are happy with their positioning. As well as being of exceptional quality, the fonts are very diverse – you should find a font to meet your needs quite easily. The backgrounds also vary in their style, there are a few stony ones and some hi-tech looking ones.

This is a great collection of fonts and backgrounds, if you are involved in video work or any other graphical project you are unlikely to find a better collection of fonts at the same price. *Video Graphics* is licenseware and can be obtained from Blue Rose for only £4.50.

Product Rating 88%

CYNOSTIC UTILITY COLLECTION #41

Cynostic PD

This is a rather juicy collection of PD utilities, unlike many other collections. There are only four programs on the disk, HyperANSI_1.08, Iconian_1.97, *TrackerPacker_3* and What?.

● The first program that caught my eye was Iconian – no, not because it sounds like the name of an Egyptian god or other suitable mythological figure, rather because I was looking for an easy-to-use 256-colour icon editor. Iconian is a Workbench 3.0-only shareware program ($10 registration) which can be used to create your own custom icons. You can either start from scratch using the program's drawing tools, or load an image or brush you have created in a paint package.

Iconian is pretty self-sufficient and requires no installation. The program uses the Workbench screen and, by default, opens four resizable windows. The main editing window is where you create your icon, the palette window provides you with a choice of 256 colours, the first eight of which are the current Workbench colours. The two remaining windows display the icon, at its normal size, as it will appear normally and when it has been selected.

The main editing window has several tools that you would expect to find in a paint package such as freehand, line, filled and outline boxes, filled and outline ellipses, fill tool and tools for cutting and pasting brushes. However, one of its best tools is not found in most paint packages, the bevelbox tool. This tool can be used to draw a box that has bevelled edges (appears to be raised like a button).

The Palette window also provides paint-package-like features. You can control each colour's RGB values, copy, switch and swap colours and even create spreads of colours.

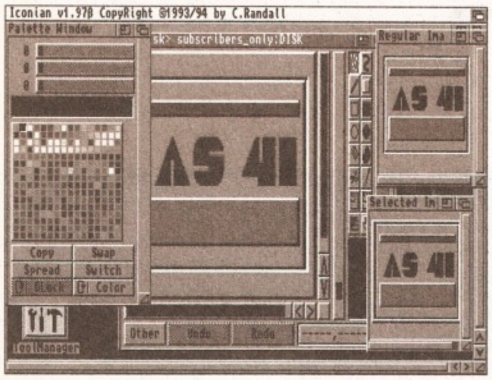
You have a choice of highlight options as well, you can choose from the complement, backfill and image modes. If you would like to get an idea of how the finished icon will appear, you can look at the selected and normal windows. You can also test the icon out.

This is an impressive program – it is easy to use and has plenty of options. The only problem is that it can be a little sluggish at times, but apart from that it performs wonderfully.

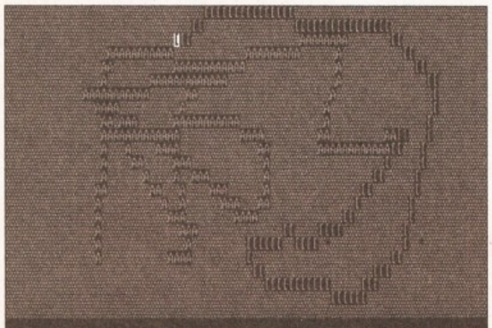
● Have you ever logged on to a bulletin board and been treated to a colour ansi-based image (the ones made out of different characters) and wondered how it was created? Well Hyperansi makes creating ansi pictures much easier, but you will need Workbench 2+.

In operation it's similar to a paint package, but instead of drawing with pixels you draw images with characters. Obviously, there are a few more differences between the way Hyperansi works and a normal paint package. For starters, instead of loading a picture file, you load a text file and when you come to save your work, it can be saved as an ANSI, ASCII or HyperAnsi file.

You also negotiate the screen in a manner which you might expect from a text editor, using the cursor keys and jumping from page to page. You



Iconian is not only an easy-to-use program, it is also capable of producing 256-colour icons (great for impressing ST-owners, heh, heh).



There is no need to wear your fingers to the bone typing up ANSI images. You can use HyperANSI – it works just like a paint program.

can also add rows and columns of blank characters. The functions keys are made use of to access special characters. If you are unhappy with any of the keys, you can actually edit keymaps from within the program.

One or two other interesting features include the fill function and line drawing tool. These tools function, more or less, in the same way as their paint package equivalents. With line-draw you first select the character that makes up the segments of the line and its colour. It's the same with the fill tool, but it can also be used in conjunction with the block function to fill selected areas.

This is an excellent program which is stuffed full of useful features – it even has macros.

● *TrackerPacker* is a simple program, it doesn't ask for much, it just wants to lead a simple life – loading Protracker modules, squashing them as best as it can and then saving them in their new miniaturised form. Phew, a complete description in one sentence!

The only other thing to mention about the program is the nifty way its documents are included. They are actually part of the program – you click on the write documentations button and the program will create an ASCII file that contains the programs instructions. If you press the replaysource – surprise, surprise, the program will create the source code needed for replaying the squashed modules. There you go, simple, yet novel – well sort of.

● What? is another small program that does a small job. What? is a Workbench 2+ program that will endeavour to tell you as much as it can about a file or directory.

It's a CLI-only tool, so you need to add some arguments if you wish to find out about any file or directory that is not in its current directory. You just need to tell What? which directory or file to check by giving the program the route to the file or directory. You can also get What? to check all the files contained in a particular directory by adding the keyword 'ALL'.

Once it has been set lose into a directory of your choosing, What? will give you a brief description of what the files are. For example, it will tell you if the file is a text file, ILBM file, a drawer or a program. This is a useful tool for habitual shell-users, as they cannot see a file's icon, and therefore receive no visual suggestion as to what the file is.

This collection has some high points, most notably Iconian, and has a couple a useful-but-unglamorous tools as well.

Product Rating 82%

THE FINAL FRONTIER NO 7

Cynostic (licenseware £7 or £1.75 per disk)

Now, I am not a Trekky or anything (OK, I admit I did spend more than a few of my childhood hours practising my Vulcan splayed-fingers salutation), but it was with some glee that I threw the *Final Frontier* disks into my floppy drives. Previously this was not the sort of thing we would include in PD World, but as this section of the magazine is expanding to less serious fields (but not games or demos), I can now review the latest edition.

For those of you who have never seen The *Final Frontier* before, it's a disk-based magazine that is dedicated to all things to do with *Star Trek*. Issue 7 is sporting a brand new interface – it's basically an emulation of the computer interfaces found in *Star Trek The Next Generation*. This interface can be used to access text files, play sounds and music and display images. The magazine usually contains articles, images, adverts, fiction, news and reports from conventions.

Issue 7 is supplied on four disks and also happens to be the Borg special. It's stuffed with loads of info about these single-minded cyborgs, as well as some extremely high-quality pictures. The articles on the Borg includes reviews of episodes in which they have made an appearance, a profile of the Borg, merchandise reviews, comic reviews, technical information and a beginners' guide. These articles provide an insight into the Borg mentality, how they function and their potential danger – all fascinating stuff.

Elsewhere in the magazine you will find a number of interesting articles. The Editorial menu contains a general introduction to the magazine, and some information about the people who have put it together – all 28 of them! Some of the names that you will probably recognise include; Tobias Richter, Allister Brimble and Bjørn A Lynne. There are also several text and graphical adverts for all sorts of things including *Star Trek* CDs and fonts. This menu includes details about how you can contribute to the magazine as well.

There is also a large selection of fiction written by both the team and some of the readers. All of the stories are, of course, based on *Star Trek* and some of them are actually quite good.

There are five musical tracks in this issue from, accomplished Swedish musician Bjørn A Lynne, Team 17's Allister Brimble and Paul Draisma. The tunes are quite mellow in their own fashion (although Anna, our Production Editor, thinks they sound distinctly 'unwell' – then again she's not the greatest exponent of Chip music).

Of course, the section that will appeal to the hardcore Trekky is the conventions menu. Surprisingly this is not just a text-based report of the conventions, there are digitised images of the cast as well.

All in all, this is a fantastic magazine – the articles are well-written and researched, the fiction is imaginative and the images are truly stunning.

Product Rating 92%
Product Non-Trekky Rating 81%

READY ROBOT

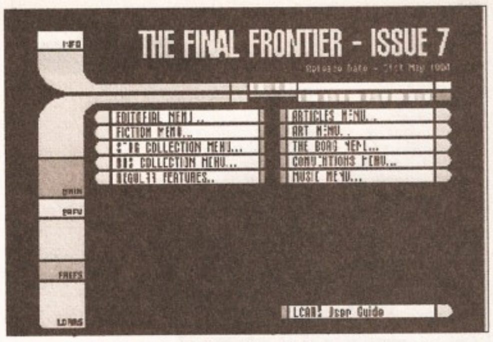
KEW 1087

The version of *Ready Robot* that is on this disk is actually a demo of a monthly international educational disk from the *Ready Robot* Club. It has been around since 1990 and is available from the US. It's aimed at parents who have children between the ages of 4 and 12 and has a variety of activities that cover a number of skills. The program can be run on virtually any Amiga with 1Mb of memory.

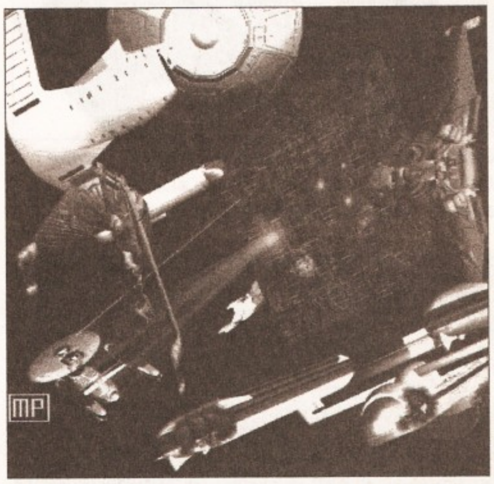
When you run the program you are greeted by an incredibly colourful screen, full of icons. Clicking on one of these icons will take you to a different activity. These can range from anything like an explanation of different types of fungus to a memory game. As this is only a demo version of the program, it has been slowed down and the sound has been disabled.

All of the program's activities feature well-drawn characters, and appear to have been the result of lots of hard work on the part of some talented people. Some of the most notable activities include: the adventure, great people, amazing science, and the maze.

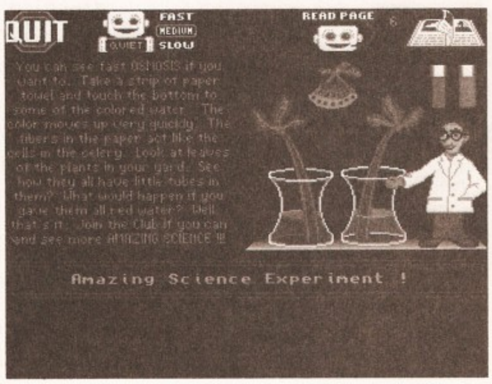
The adventures section is largely historically-based. It focuses on things of interest from the past. It also provides present-day references so the child can easily relate to how these things have



Issue 7 of the Final Frontier disk magazine has an all new interface – cor, it's just like the Next Generation's computers.



Tut, tut, those Borgs are a "bunch of bad hats". They're always in the middle of any trouble, telling people that they will be assimilated.



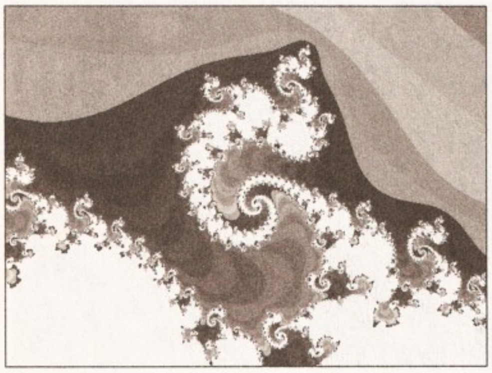
This is just one of the many activities for children that can be found on the Ready Robot Club's disk. This experiment demonstrates osmosis.



Grinder is a program that can convert stunning images such as this one. It can also convert several images, using its Batch mode.



The latest version of SuperDark can now show images of this quality as part of a screen-saving module, by using Amiga DataTypes.



Somewhere in the depths of the Mandelbrot set, is this interesting formation. But, don't hold your breath while it renders!

changed over time.

The great people section contains information on famous individuals. This issue's famous person was Sally Ride, the first American female astronaut. It provides some details of early childhood and how she became an astronaut. Amazing science takes a fun approach to introducing children to the joys of science. As well as simply explaining scientific principles, it also has experiments for the children to perform with their parents. Maze is a game were the child has to move from a start point in the maze to the finish point.

This is an impressive program that is well produced and well thought-out. It is definitely a program that does a good job of educating children and does just as well at keeping them amused.

Program Rating 88%

GRINDER

Roberta Smith DTP

Now, I know this program's name makes it sound as if it performs some kind of unpleasant task or serves some sort of sordid function, but *Grinder* is simply a picture converter. Oh no, not another picture converter, I hear you say. But, this is a picture converter with a difference. Oh no, not another picture converter with a difference. No really, this is an excellent picture converter.

The thing that grinder has that most PD conversion programs lack, is that it can execute a script of conversions so you can perform a batch conversion. But, the best thing about it is how easily you can compile a batch. There is no need to fiddle with AmigaDOS options. To compile a list of pictures to convert, you can make use of a filerequester.

Once you have selected your input files, the next thing you need to do is select the output files' format. As well as the program's ease of use, it has another bonus in the number of formats it can handle. It is by no means a new product, but it can handle pictures from a variety of computer platforms, including several Atari ST and PC ones. It can also handle some older Amiga formats.

The bottom line is that although *Grinder* is quite old, it is still very easy to use, it can handle several file formats and its batch conversion abilities can make life a lot easier.

Program Rating 87%

SUPERDARK 2.1A

Kew=II

If you have already read this month's *Window Shopper*, you will have read the review of *MaxonMagic*. You can probably tell that I was not overly impressed with its screen-saving modules. I also mentioned that there were PD programs that more than matched them – *SuperDark* is one.

For those of you who have never seen a screen-saver before, they are basically small programs that start off after a period of inactivity. Once activated, they usually display an animation or just blank out the screen. The reason is that when a more or less static image, such as the Workbench screen, is displayed for some time, it can cause phosphor damage to your screen.

If you have Workbench 2 or 3, you will already have the screen-saver commodity that was supplied with it, Blanker. However, things have gone way beyond that; screen-savers are no longer a safety precaution, they're an artform. So, if you're looking for something a little more imaginative than a few lines bouncing around your screen, you may find *SuperDark* a good alternative.

One of the major changes to this version of *SuperDark* is that it works a lot better with AGA-screenmodes. Of course, there have been some more modules added.

There are now so many modules that it would take an age to describe them all, so I'll only cover a few of my favourites. The 3D module has been added, so instead of just the spinning Commodore logo and computer, you can also select a slinky-like thing that will make its way across your screen. Another good one is the slideshow module – as the name suggests, this module will display a slideshow of pictures. To use it, you just select the picture that you want to be included in the slideshow and they will be shown when the module has been activated. This module is pretty clever as it utilises datatypes, so as long as you use the appropriate datatype installed, you can view almost any picture. It's also AGA-compatible, so you can view HAM-8 images.

This program has been my favourite screen-saver for some time, and now that it can handle 256-colour animations and display HAM-8 images it will be my favourite for some time to come. There is, however, one thing you have to bear in mind – some of the modules are quite memory- and CPU-intensive, as I found out when running the slideshow module with several large 24-bit JPEGs selected!

Program Rating 93%

THE VOYAGE OF COROMANDEL

Roberta Smith DTP

You see, Coromandel was this bloke who lived a long time ago (he's dead now), who liked travelling. Well, actually that's not quite true; the Coromandel was a transport ship. *The Voyage of Coromandel* is a program that details the ships voyage from Portsmouth to Sydney – a heck of a way, especially as this journey took place in 1802.

The program is far from new, but I've never seen it before, and I suspect that I am not the only one. Instead of following the currently popular method for educational presentations, using Hyperbook, this program is actually written in Amiga basic (remember that?).

The program contains some interesting information about the ship itself. Apparently it was built in 1793 and measured 125x32 feet and was armed with 12 18lb cannons. Its voyage to Sydney was the first non-stop journey from Europe to New South Wales. Not only that, it was the longest non-stop voyage undertaken at the time (15,183 miles). It was also the first ship to make the voyage without the loss of convict lives.

The right-hand of the screen is occupied by a map of the voyage. To display the different stages of the voyage you can either scroll forward or backward by using the two buttons at the bottom of the screen.

At the centre of the screen you will find the entries that were made in George Hall's Diary. Although I must admit I am not entirely sure who George Hall was – the Captain perhaps?

There is also an option menu that can used to search for a specific date during the voyage. A second option will provide you with an overall map that shows all of the maps as segments. To display a section of the map you just enter its number.

This is quite a good educational program which is even more impressive because of its age. If you are interested in history, you are certain to find *The Voyage of Coromandel* interesting.

Program Rating 82%

FRACTINT

Cynostic

If, in a moment of weakness, you were to have a look around a PC user's hard disk, there is one program that you would probably find in the majority of them. That program is *Fractint*. For several years it has been one of the most popular PC fractal utilities, with a constant stream of upgrades and enhancements from many programmers. Now Terje Pedersen has ported this program over to the Amiga, so you can now see how it should really be done.

Fractint is pretty fast, but no fractal program is ever going to be particularly speedy, especially when you get into some of the higher magnifications. For instance, the super hi-res 256 colour fractal on page 86 took about five minutes to draw, but this was on an A4000/040. Other machines would be significantly slower than this.

The fractals can be created on any screen from the workbench display database, so you could even generate 24-bit fractals if you had a 24-bit card, such as the Picasso II or EGS Spectrum, which worked with the operating system.

Fractint also requires the Magic User Interface (MUI) system, so this will also have to be installed. This is used as an easy way of creating all of the file requesters and such like. This really doesn't stop *Fractint* being a bit of a pain to use. Mind you, it does serve as a lesson in what PC owners have to put up with.

Program Rating 75%

PUBLIC PERSONALITY

Virus Free PD is a Swindon-based PD shareware library that has collected an impressive collection of programs, in a relatively short time. The library contains a wide selection of programs that include printer drivers, 3D objects, games, videotitling, fonts and a growing collection of AGA-specific titles.

We had a chat with Vince Pike, the owner of Virus Free PD, to see what he thinks of the current Amiga PD scene, and to find out why he decided to sacrifice large chunks of his time to run a PD library.

How long have you been running Virus Free PD?
We started running Virus Free PD way back in 1989

Why did you decide to start running a PD library?
Initially it started out as a hobby. We had a large PD collection anyway, and then we decided to take out a few small advertisements, mainly to gain local costumers and then one thing lead to another...

How large a collection of disks do you have now?
Without including things like Scope, Fred Fish and similar collections, we have about 4,300 disks.

What have you found to be the best thing about running a PD library?
I suppose going through new software, seeing what's new on the market. Another enjoyable thing is helping beginners.

What's the most dynamic section of software collection, in terms of new products?
Probably serious software. We are finding that it's becoming more and more part of our business – things like clip-art and fonts.

Has that always been the case?
It's definitely changed. Initially most PD was basically demos – when we started out there wasn't much in the way of utilities.

Where do you think the future of PD lies?
To be honest, I think it's going toward CDs. Although, obviously there will always be floppy disks. But, we're finding that more and more people are asking for CDs.

What's the most innovative piece of PD that you've seen recently?
It's not really that new, but something that is popular at the moment – a thing called hardware projects. This a set of instructions, on disk, that explain how to build various pieces of hardware like samplers. The best thing about it is that it gets people tinkering with their machines.

CYNOSTIC UTILITY COLLECTION #46

This is another collection of programs from Cynostic. It contains a variety of programs, some of which are useful, and others that are just plain fun. The programs on the disk include: *AGuide, CatchDisk 1.20, FloppyBase 1.05, AddressBook 1.4, Fileshow 3.0* and *SpiroDraw 4*.

● The first program of this collection that I tried out was *SpiroDraw*. I did this in hope that it might be a computerised version of the 70's classic *Spirographic*, and indeed it is. As with the product it is based on, *SpiroDraw* is simple to use, yet produces complicated images.

To determine how the pattern that the program produces will eventually appear, you have to set the data. As you alter the values, you are presented with a view of the size and positions of the wheels that will be created. The wheels are what will create the pattern as they move around. As well as entering your own figures, you can use the random button to create random patterns. In my experience, the random settings usually produce a more attractive image.

Well, that's about it. Like I said it's a simple program. However, after my first few nostalgia-laden moments with the program, I did become suicidally bored. So, be warned, this product is unlikely to win any longevity awards, even with kids.

● *AddressBook* is a tidy little program – it doesn't get under your feet, but just sleeps in a quiet corner of your Workbench Screen until it's needed, and then springs into action. Well, perhaps action is too strong a word for it, perhaps functionality is better. Anyway, as you might expect from a program by the name of *AddressBook*, it is an addressbook.

To use it, you simply add a name, address, postcode and telephone number. Once you have done that you can easily scroll through the entries to find the one you want. Alternatively you can perform a search. The search can be performed on either the entry's name or address.

A rather useful feature of *AddressBook* is that it can actually dial an entry's number by making use of tone-dialling. Instead of pressing the buttons on the phone you can just press the receiver against your monitor's speaker and, hey presto, you'll be connected to your Girlfriend or best mate.

This is quite a useful program and its sleep mode means it can easily be activated when you need it.

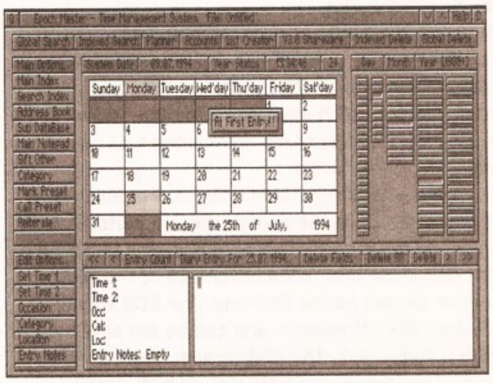
● The Amiga and the Mac have quite similar interfaces, although the Amiga can be adapted to your personal taste and needs more easily. However, one thing the Mac has that the Amiga does not, is a little requester that pops up when you insert a disk that it cannot read. The requester asks if you would like to format the disk that has been inserted. Of course, on the Mac if you say yes the Mac will be tied up for next few minutes – multi-tasking, pah!

However, if you feel left out by the absence of this requester from your system, you may find *CatchDisk* of some use. *CatchDisk* is a small commodity that will check each disk that is inserted into your machine. If the information on the disk cannot be read, then you will be given the opportunity to format the disk.

"Hang on", I hear you say, "what about MSDOS disks"? Well, this is the clever part of the program; as it would check both the DF0: and PC0: devices when trying read a disk.

If you want *CatchDisk* to be present all the time you can place it in your Wbstartup draw and it will be activated each time you reset your computer. The program is Workbench 2+ only and requires version 1.4 of Stefan Becker's WbStart-handler. To be honest though, I think that the Amiga's icon do a sufficient job of telling you a disk is unreadable.

Overall, this collection is a little weaker than most of Cynostic's disks, but is still worth a look. But, one thing you should bear in mind is that quite a few of the programs require MUI (Magic



Sort yourself out man! Get a copy of Epoch Master – its a comprehensive time management system with plenty of features.



That Morphy, he's a bit of a shifty character. That grin – it's positively wicked, and where did he get all of that cash from?

TOP TEN PD CHART – IT'S THE ONLY CHART THAT COUNTS

This month we continue our quest to keep you up-to-date with the most popular PD at the moment. We give you a list of the top ten programs and disks that have been ordered from two PD libraries. It gives you a chance to see which programs are popular with your fellow Amiga-users.

Cynostic ☎ 0203 681687	PDSoft ☎ 0702 466933
1 Spectrum Emulator 2 + games	1 PC Task
2 bBase 3	2 Spectrum Emulator 2
3 Magic Camera 68020	3 Systeminfos
4 Eagle Player 1.52	4 AGA Blankers
5 Morphy The Magic Man (AGA)	5 Workbench 3.0 Utils 7
6 Fractint 68020	6 Kick V1.4
7 Text Engine 4.1	7 DiskSalv Utils
8 Exotic Ripper 2.22	8 GNU C/C++ Compiler
9 DOS Trace 2.20 (Cynostic utils #44)	9 Stereoscopic 2.4a
10 Filer 3.15 (Cynostic utils #52	10 AGA Libs and DataTypes
Cynostic, Office 01, New Enterprise Centre, Little Heath Ind. Est., Old Church Road, Coventry, CV6 7NB.	PDSoft, 1 Bryant Ave, Southend-on-Sea, Essex, SS1 2YD.

User Interface).

Product Rating 71%

MORPHY THE MAGIC MAN

(by Eric Schwartz)
Cynostic (Disk A0137 ECS, A0138 AGA)

Eric Schwartz is perhaps the most prolific of Amiga animators and, arguably, the best. He's been producing top-notch animations for around five years now, and one of his animations first drew my attention to the Amiga.

Morphy the Magic Man is Eric's first animation of this year; it's in the same excellent cartoon style as his previous ones. This also happens to be his first animation that takes advantage of the AGA chipset as well as the ECS one. The ECS version requires 2Mb of memory and can be run straight from a floppy disk. The AGA version needs a total 4Mb of memory and a hard disk or high density floppy drive. The AGA disk contains an archive that, when extracted, will take up 1.4Mb of disk space.

The animation was created with the aid of *Digiview*, *Brilliance* and *Anim Workshop*. If you have not seen an Eric Schwartz animation before, the first thing will notice (after the excellence of his erm... character design), is how smoothly and naturally the characters move around. The excellent quality of the animation is augmented by the humourous sounds that accompany the action.

Pay attention! Do not read the rest of this paragraph – it may spoil your enjoyment of the animation's ending.

You had to read on, didn't you? I am going to give a brief outline of the animation. The main character is Morphy who is a magician; he is performing a trick of transforming an object several times. His lone spectator express his appreciation with a round of applause. As an encore Morphy transforms the object one more time. Only this time it changes into a huge slab, which falls on to his spectator. Morphy then proceeds to reach under the slab and pulls out his spectator's wallet, smiling wickedly as he does so.

By anyone else's standard, this animation is stunning, but in comparison with Eric's previous works it falls a little short of his excellent standards. However, this is an animation that is definitely worth a few moments of your time.

Product Rating 85%

EPOCH MASTER V3.0

Jack Pritchard

Epoch is shareware program that sets out to give you a hand in attempting to sort out your life. It's not just another personal organiser, it's a time and personal management system. Among its many functions are a year planner, database, diary, calendar, accounts section and an addressbook.

The most immediately impressive thing about *Epoch Master* is its great appearance. Its interface is highly polished and is almost the match of any commercial package. The main screen appears a little confusing at first, but is actually well-designed and you'll soon find that it's very easy to gain access to the other areas of the program.

The centre of the screen is occupied by a calendar, to select a date for making an entry you can just click on its square. Alternatively, there is a row of buttons to the right of the screen. These buttons are divided into three main columns: one for the day of the month, one for the month, and another for the year. Every fourth button in the year column is marked red to signify a leap year, and contains the leap years for any 42-month period from 1530 to 2900.

The bottom half of the screen is where you make your entries for a date. You can enter up to a maximum of two times for the event, as well as setting an alarm. There are several occasions already programmed, including parties, interviews, business appointments and weddings – you can, of course, enter your own too. You can also enter a category, location and other details.

Along the top of the screen you'll find a row of buttons that will perform a variety of functions. The buttons can be used to perform a global search, an indexed search, a global deletion, an indexed deletion. They can also be used to access the planner, accounts section, or the list creator.

The planner is similar in appearance to the paper version. It's a display of every day of every month of the selected year. You can easily move to any of the dates by clicking on it.

The accounts section works in the same way that most budget managing programs work. You enter the date of a transaction, a description of the transaction and whether it is a credit or a debit. Once you have entered the necessary information, you press the balance button and it will tell you how much money should be left in your account.

The program's addressbook and database are quite standard. You get all the usual fields in the addressbook, such as name, address etc. The database also follows the standard format; you start off with several empty fields, which you can give names, and then fill in with your data.

This is the most impressive organiser program that I have seen. I only have a couple of complaints. The first is that the program appears to be very processor hungry. As a result, there is quite a noticeable slowing down of other programs when they are multitasked with *Epoch Master*. The other complaint is that my life is still in shambles.

Program Rating 96%

UK PD HOUSES UK PD HOUSES

A1200 Only PD. Contact B J Cowdall, 27 Pheasant Way, Cirencester, Glos. GL7 1BJ.
Activity Software, 393 Doncaster Road, Rotherham, South Yorkshire S65 2UF ☎ 0709 377 730 Fax: 0709 838 068.
AGA Exchange, 18 Brownshill, Cromer, Norfolk NR27 0QA. Ads free. Membership fee £9.
Amicom PD, 22 Church View Close, Havercroft, Wakefield WF4 2PH.
AMOS PD, 1 Penmynydd Road, Penlan, Swansea SA5 7EH.
Amigaholics, Kevin Bryan, 49 Coutts House, Charlton Church Lane, Charlton, London SE7 7AS.
Amiganuts United, 1 Daffern Avenue, New Arley, Coventry CV7 8GR.
Amiga Productivity PD Series, 51 Ennors Road, Newquay, Cornwall TR7 1RB. Contact M J Docking.
Anglia PDL, 30 Victoria Street, Felixstowe, Suffolk, IP11 7EW. ☎ 0394 283494.
Anim1 PD, 2 Fatherwell Avenue, West Malling, Kent ME19 6NG.
Armchair PD, 180 Blackton Close, Newton Aycliffe, Co Durham DL5 7EY.
Artman, 40 Northwell Gate, Otley, West Yorkshire LS21 2DN. ☎ 0943 466476.
Asgard PD, 20 Langdale Drive, Flanshaw, Wakefield WF2 9EW. ☎ 0924 363059.
Batty's PD. Contact Ian or Lynn Battison, 7 Denmark Road, Northampton NN1 5QR. ☎ 0604 22456. Life membership £3.99.
Barkin' Mad, 18 Rhyber Avenue, Lanark, Lanarkshire ML11 7AL.
Beats Brothers, 6 Brownings Close, Pennington, Lymington, Hampshire SO41 8GX.
Belshaws PD, 55 Baldertongate, Newark, Notts. NG24 1EU. ☎ 0636 72503.
BG PD, 6 Peter Street, Whitehaven, Cumbria CA28 7QB.
Blitter, 213 Fordfield Road, Sunderland SR4 0HF.
Blitterchips, Cliffe House, Primrose Street, Keighley, BD21 4NN. ☎ 0535 667469.
BTK, 7 Callander Road, Catford, London SE6 2QA. ☎ 081 473 1650.
Bus Stop PD. Contact Lisa or Cheryl, 6 Smiths Avenue, Marsh, Huddersfield HD3 4AN. ☎ 0484 516941.
C and C PD. Contact Chris Wildman, 3a The Cedars, Tilehurst, Reading, Berks. RG3 6JW. ☎ 0734 411131.
Chris's PD, 22 Merryfields Avenue, Hockley, Essex SS5 5AL.
Colwyn PD, Andy Roberts, 17 Gladys Grove, Colwyn Bay, Clwyd LL29 7YB. ☎ 0492 533442.
Compo Software, 36 Priory Rd, Fareham, Hants, PO15 5HT
Computer & Design Services, 24 Blackmoor Croft, Tile Cross, Birmingham B33 0PE. ☎ 021 779 6368
CP PD, (in association with NFA Productions) 3 Dunedin Crescent, Winshill, Burton on Trent, Staffs. DE15 0EJ. ☎ 0283 516736.
Crazy Joe's, 145 Effingham Street, Rotherham, South Yorks, S65 1BL. ☎ 0709 829286.
Cygnostic, New Enterprise Centre Little Heath Ind. Estate, Old Church Road, Coventry CV6 7NB.
Deja Vu, 7 Hollinbrook, Beech Hill, Wigan WN6 7SG. ☎ 0942 495261.
Deltrax PD, 36 Bodelwyddan Ave, Old Colwyn, Clwyd LL29 9NP ☎ 0492 515981
Diskovery PD, 108 The Avenue, Clayton, Bradford, West Yorkshire BD14 6SJ. ☎ 0274 880066.
Essex Computer Systems, 118 Middle Crockerford, Basildon, Essex, SS16 4JA. ☎ 0268 553963.
Eurodisk PD, PO Box 2, Radlett, Herts WD7 8QL.
Express PD, 47 Aberdale Road, West Knighton, Leicester LE2 6GD. ☎ 0533 887061.
Fantasia PD, 40 Bright Street, Gorse Hill, Swindon, Wilts SN2 6BU.
Five Star PD, 48 Nemesia Road, Amington, Camworth B77 4EL. ☎ 0827 68496.
GVB PD, 43 Badger Close, Maidenhead, Berks. SL6 2TE. ☎ 0831 649386.
Haven Computing, 15b Meeching Road,Newhaven East Sussex BN9 9RL. ☎ 0273 513491
Highland PD, David Paulin, 1 Whinpark, Muirtown, Inverness IU3 6NQ. ☎ 0463 242431.
Holmes Brothers Compilations. Contact Craig for monthly compilation disk. 23 Rocester Avenue, Wednesfield, Wolverhampton, West Midlands WV11 3AU. ☎ 0902 733418.
Hornesoft PD. Contact Chris Horne, 23 Stanwell Close, Wincobank, Sheffield S9 1PZ. ☎ 0742 422000.
ICPUG (Independent Commodore Product Users Group), PO Box 1309, London, N3 2UT. ☎ 081 346 0050.
Immediate Arts, 26 Lyndhurst Gardens, Glasgow G20 6QY. ☎ 041 946 5798.
John Leaver, 99 Ibsley Gardens, London SW15 4LX.
Judge Dredd's PD, 1 Nottingham Road, South Croydon, Surrey CR2 6LN.
Kew=II Collection, PO Box 672, South Croydon, Surrey CR2 9YS. ☎ 081 657 1617.
KT's PD. 75 The Drive, Rochford, Essex SS4 1QQ. ☎ 0702 542536.
Langham PD. Contact Richard Payne, 89 Wolverhampton Road, Codsall, Wolverhampton WV8 1PL
Logic PD, 8/5 Glenalmond Court, Sighthill, Edinburgh EH11 4BE.
Magnetic Fields, PO Box 118, Preston, Lancashire PR2 2AW. ☎ 0772 881190
MegaSoft, 78 Bockingham Green, Basildon, Essex SS13 1PF. ☎ 0268 559164
NBS, 1 Chain Lane, Newport, Isle Of Wight, PO30 5QA. ☎ 0983 529594.
Network PD & Shareware Library, Kenmare, Co. Kerry, Eire. ☎ 010 353 64 41603
NFA–PD, R. Monks, PO Box 42, Grimsby, South Humberside DN33 1RY.
NJH Computers, 12 Meesons Mead, Rochford, Essex SS4 1RN. ☎ 0702 546796.
Northern Amiga Users Group, PO Box 151, Darlington DL3 8YT.
Numero Uno, 21 Burstall Hill, Bridlington, N Humberside YO16 5NP. ☎ 0262 671125.
Online PD, 1 The Cloisters, Halsall Lane, Formby, Liverpool L37 3PX ☎ 0704 834 335, BBS 0704 834 583.
Orbital Software. Contact A Flowers, 37 The Orchard, Market Deeping, Peterborough, Cambs. PE8 8JR. ☎ 0778 342064.
Pathfinder PD, 41 Marion Street, Bingley, W Yorks. BD16 4NQ. ☎ 0274 565205.
Penguin Public Domain, PO Box 179, Reading, Berks RG3 3DD.
PD Soft, 1 Bryant Ave, Southend-on-Sea, Essex SS1 2YD. ☎ 0702 466933.
Phil's A1200 Only PD, Phillips Woods, 101 Grove Rd, Gosport, Hants PO12 4JJ.
Premier PD, 45 Fairfield Gardens, Eastwood, Leigh-on-Sea, Essex SS9 5SD. ☎ 0702 520520.
Riverdene PDL, 30a School Road, Tilehurst, Reading, Berkshire RG3 5AN. ☎ 0734 452416.
Roberta Smith DTP, 190 Falloden Way, Hampstead Garden Suburb, London NW11 6JE. ☎ 081 455 1626.
Scribble PD, 2 Hillside Cottages, Burstall, Suffolk IP8 3DY. ☎ 0473 652 588.
SeaSoft Computing, The Business Centre, 1st Floor, 80 Woodlands Avenue, Rustington, W. Sussex BN16 3EY. ☎ 0903 850378.
Sector 16, 160 Hollow Way, Cowley, Oxford. ☎ 0865 774472.
17-Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. ☎ 0924 366982.
Softville, 35 Market Parade, Havant, Hants PO9 1PY. ☎ 0705 498199.
Software Expressions, Unit 4, 44 Beauley Road, Southville, Bristol BS3 1PY. ☎ 0272 639593.
Startronics, 39 Lambton Rd, Chorlton, Manchester M21 0ZJ. ☎ 061 881 8994.
Tazmania PD, 4 Boultham Avenue, Lincoln LN5 7XZ. ☎ 0522 538706 (after 6 pm).
Telescan Computer Services, Handsworth Road, Blackpool FY5 1SB. ☎ 0253 22296.
Trevan Designs Ltd, PO Box 13, Aldershot, Hants. GU12 6YX. ☎ 0483 725905 (note: modem)
Vally PD, PO Box 15, Peterlee, Co Durham SR8 1NZ. ☎ 091 587 1195.
Virus Free PD, 1F Offices, Victoria Centre, 138-139 Victoria Rd, Swindon, Wiltshire SN1 3BU. ☎ 0793 432 176
Visage Computers PDL. 18 Station Road, Ilkeston, Derbyshire DE7 5LD. ☎ 0602 444501.
WMC (Worldwide Marketing Concepts), 5 Arthur Terrace, Penisarwaen, Gwynedd, LL55 3PN. ☎ 0286 871815.
Your Choice PD Library, 39 Lambton Road, Chorlton-cum-Hardy, Manchester M21 1ZJ. ☎ 061 881 8994.

● **Attention! If you run a PD library not listed here, or want to amend any information, send us the full details.**
● **Whenever you write to the libraries for a catalogue, include an SAE for its return.**
● **The libraries named in the reviews were the ones that provided us with the disks. Given that PD can be freely copied, the same programs could very well be available from several libraries. Search around! Why not start at the Market Place?**

SHOP AT THE MARKET PLACE

Don't forget to turn to *Amiga Shopper's* 'Market Place' section (page 42-43) for a taste of what some of the best PD Houses in the country have to offer.

Don't miss it!

UK PD HOUSES – UPDATE FORM

Issue 41

Name: ....

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....

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Do you specialise in any particular areas? ....

If yes to the above, what are they? ....

....

The cost of your catalogue? .... **Do you accept phone orders?** ....

Do you accept credit cards of Direct Debit? ....

Opening hours? ....

Any additional information? ....

....

AMIGA FORMAT PRESENTS



“This range of videos has been designed to help you, the readers of Amiga Format, get the most out of your machine. I'm sure you'll find our expert tuition absolutely vital!”

Steve Jarratt, Editor, Amiga Format

From the people who bring you *Amiga Format* comes a series of specially-created videos, enabling you to get the most out of your Amiga. All videos are just £14.99, but you can save £10 by buying three titles for just £34.95!

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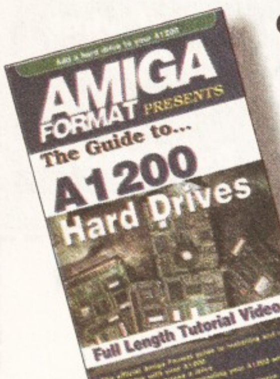


FIRST STEPS WITH PERSONAL PAINT

***Personal Paint* is the brilliant package from Cloanto that Commodore now bundle with the A1200. The *AF* video brings you expert advice on:**

- Bitmap graphics.
- Brush operations.
- In-depth tutorials on stencils and image processing.
- File techniques.
- File formats and much more.

(AF0001)

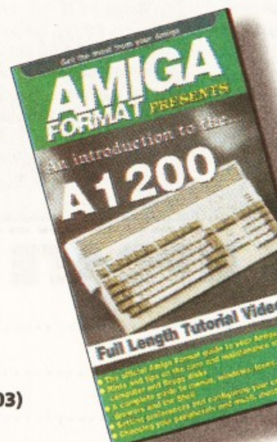


GUIDE TO A1200 HARD DRIVES

Buying a hard drive will open up a whole new world of Amiga use. We tell you how to:

- Choose a drive.
- Install a drive.
- Partition and format your disk.
- Install your Workbench disks and other software.
- Take care of your drive.
- Use useful disk utilities.

(AF0003)

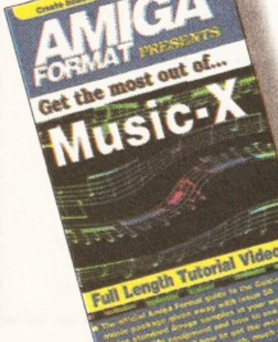


AN INTRODUCTION TO THE A1200

***AF* experts show you how to get the most out of this powerful, versatile home computer, by explaining:**

- How to care for your Amiga.
- How to perform basic disk operations and care for your disks.
- All you need to know about icons, files, menus and drawers.
- How to set your preferences.
- How to install a monitor.

(AF0002)



GET THE MOST OUT OF MUSIC-X

***Music-X* is one of the most powerful sequencer packages for the Amiga. We show you how to get in tune by:**

- Explaining how to set preferences.
- Telling you how to get the most out of Amiga samples.
- Giving you in-depth tutorials.
- Guiding you through the world of MIDI equipment.

(AF0005)

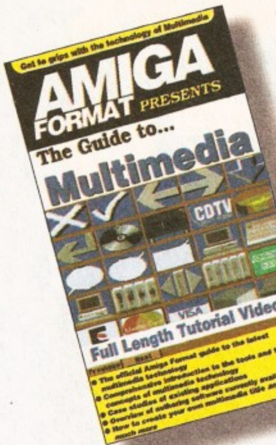


THE GUIDE TO UPGRADING YOUR MACHINE

As you begin to realise the amazing power and potential of your Amiga you'll want to make it even bigger and faster. We show you how to:

- Install the latest versions of Workbench and Kickstart.
- Add RAM to your Amiga.
- Install and get the most out of a Floating Point Unit.
- Buy add-ons and upgrades from mail order companies.
- Dismantle your machine.

(AF0004)



THE GUIDE TO MULTIMEDIA

One of the Amiga's greatest strengths is its ability to handle video and music to create multimedia presentations. We show you:

- **The ways in which you can use multimedia presentations.**
- **How to choose the best package for your needs.**
- **How to create your own multimedia title.**
- **How to get to grips with the concepts of multimedia.**

(AF0006)



THE BEGINNER'S GUIDE TO DESKTOP VIDEO

Are you a budding Spielberg? Well, he uses the Amiga to create some of his astounding effects. Find out how to harness Amiga video power with:

- **Our top tips for building a home video system based on your Amiga.**
- **Tutorials on how to create and title your own videos.**
- **Advice on how to choose and use a genlock and a chromakey.**
- **How to use fades and wipes.**
- **How to add music.**

(AF0007)

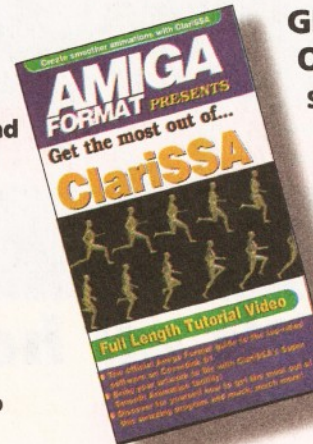


THE ADVANCED GUIDE TO DESKTOP VIDEO

If you've already got to grips with the basics of Amiga DTV, then expand your knowledge with our advanced course which includes in-depth advice on:

- **How to choose and use advanced video hardware.**
- **Image processing and 24-bit graphics cards.**
- **How to use a digitiser.**
- **Learning professional video editing techniques.**
- **How to get the most out of different video formats.**

(AF0008)



GET THE MOST OUT OF CLARISSA

Say goodbye to jerky IFF sequences with the remarkable *ClariSSA* animation utility from the *AF61* Coverdisk. Find out how to:

- **Bring your art to life with the Super Smooth Animation facility.**
- **Use *ClariSSA*'s colour effects.**
- **Apply fade and other effects to your animations.**
- **Convert your animations.**

(AF0009)

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You will not need a stamp when you post this order and postage and packing are free. There are no extra costs. Please allow 28 days for delivery.
AF62

Product Locator

The complete guide to the best in Amiga hardware, software and PD.

Hardware

500RX
External 8Mb RAM expansion for A500
Rating: 60%
Reviewed: 5
Supplier: WTS Electronics
Price: £199

A1230
14MHz 68030 and 68882 accelerator for the A1200
Rating: 90%
Reviewed: 27
Supplier: Silica
Price: £299

A1500/B2000
Discontinued. Big-box version of A500/A500+
Rating:
Reviewed:
Supplier: Commodore
Price: £S/H500

A2630
25MHz 68030 and FPU accelerator for the A1500(+)
Rating: na
Reviewed: na
Supplier: Commodore
Price: £1200

A3000-16
Discontinued. 608030 16MHz very rare. ECS chip set + 2Mb
Rating: na
Reviewed: na
Supplier: Commodore
Price: £S/H900

A3001
50MHz 68030+FPU accelerator for the A1500(+)
Rating: 90%
Reviewed: 3,5
Supplier: Silica
Price: £1799

A4000-30
Stripped version of A4000
Rating: na
Reviewed: na
Supplier: Commodore
Price: £999

A4000-40
Flagship 25Mhz 68040/AGA Amiga
Rating: na
Reviewed: na
Supplier: Commodore
Price: £2000

A500
Early machine with 512K. Good S/H models rare.
Rating: na
Reviewed: na
Supplier: Commodore
Price: £120+ (used)

A500+
Early V2 machine with 1M RAM. Good value S/H.
Rating: na
Reviewed: na
Supplier: Commodore
Price: £140 (used)

A5000-16
16MHz 68020+FPU accelerator for the A500(+)
Rating: na%
Reviewed: 4
Supplier: ACL
Price: £189.99

A530
40MHz 68030+FPU accelerator for the A500(+)
Rating: 90%
Reviewed: 20
Supplier: Silica
Price: £800

A590
Hard disk/RAM expansion for A500+
Rating: 50%
Reviewed: 1,8,13
Supplier: Commodore
Price: £399

A600
The most basic Amiga currently available new
Rating: 80%
Reviewed: na
Supplier: Commodore
Price: £199

A8802SVHS
SVHS version of A8802 genlock with fade and dissolve
Rating: 50%
Reviewed: 10
Supplier: Marcam
Price: £499

AdRAM 2000
Internal RAM expansion for big box Amigas
Rating: 70%
Reviewed: 8
Supplier: Power Computing
Price: £179

AdSpeed
16MHz 68000 accelerator for the A500(+)
Rating: 70%
Reviewed: 3,5
Supplier: Silica
Price: £173

AEHD
One of the few high-density drives for the Amiga
Rating: 70%
Reviewed: 8
Supplier: Applied Engineering
Price: £140

Alfaoptic
3000dpi true optical mouse
Supplier: Golden Image
Price: £29.95

Alfapower HD
IDE hard drive controller for A500/A500+
Rating: 80%
Reviewed: 33
Supplier: Golden Image
Price: £99.95

Alfascan
Hand-held 400dpi monochrome scanner
Rating: 90%
Reviewed: 14,22
Supplier: Golden Image
Price: £119.95

Alfascan-Plus + OCR
Hand-held 400dpi monochrome scanner
Rating: 90%
Reviewed: 14,22
Supplier: Golden Image
Price: £139.95

Alfascan-800
Hand-held 800dpi monochrome scanner
Supplier: Golden Image
Price: £119.95

AMAS 2
8-bit stereo sound sampler with volume control
Rating: na%
Reviewed: na
Supplier: MicroDeal
Price: £100

Amitek 600
Internal RAM expansion for the A600
Rating: 70%
Reviewed: 24
Supplier: Silica
Price: £45

Aries 2000
Internal RAM expansion for big box Amigas
Rating: 70%
Reviewed: 24
Supplier: Power Computing
Price: £129

Audio Engineer
8-bit stereo sound sampler with adjustable volume
Rating: 90%
Reviewed: 5
Supplier: Silica
Price: £199

Automouse/Joystick switch
Optomechanical mouse
Rating: 95%
Reviewed: 32
Supplier: Golden Image
Price: £12.95

B5000-25
25MHz 68030+FPU accelerator for the A500
Rating: 70%
Reviewed: 3,5
Supplier: ACL
Price: £479

Canon BJ-10ex
Reliable and popular ink-jet. 360DPI, 83 CPS
Rating: 90%
Reviewed: 22
Supplier: Canon
Price: £299

Canon BJ-10sx
Alternative BJ-10 ink-jet. 360DPI, 110 CPS
Rating: 70%
Reviewed: 29
Supplier: Canon
Price: £227

Canon BJ-300
Fast desktop ink-jet. Three fonts, 360DPI, 300 CPS.
Rating: 70%
Reviewed: 22
Supplier: Canon
Price: £495

Canon LBP4 Plus
5PPM, 300 DPI laser. 512K basic RAM
Rating: 70%
Reviewed: 22
Supplier: Canon
Price: £1175

CAX354
Stylistic external floppy disk for all Amigas
Rating: 70%
Reviewed: 0,2,8
Supplier: Cumana
Price: £75

CBM040
40MHz 68040+FPU accelerator for the A3000
Rating: 90%
Reviewed: 20
Supplier: Commodore
Price: £na

Cherry Mk4
High resolution 9' x 12' touch tablet
Rating: na
Reviewed: na
Supplier: Cherry
Price: £450

Citizen 240C
24-pin colour printer. 240 CPS and nine resident fonts
Rating: na
Reviewed: na
Supplier: Citizen
Price: £350

Citizen L24d
24-pin impact printer. 109 CPS
Rating: 70%
Reviewed: 4
Supplier: Citizen
Price: £292

Citizen M200
24-pin impact printer with 240 CPS performance
Rating: na%
Reviewed: na
Supplier: Citizen
Price: £250

Citizen Projet
Impressive ink-jet from Citizen. 360 DPI, 360 CPS
Rating: 70%
Reviewed: 22
Supplier: Citizen
Price: £496

Citizen Swift 24
Well-made 24-pin impact engine. 121 CPS. Five fonts.
Rating: 70%
Reviewed: 4
Supplier: Citizen
Price: £428

Citizen Swift 9
9-pin impact printer .121 CPS. Three fonts. Colour kit avail.
Rating: 90%
Reviewed: 4
Supplier: Citizen
Price: £280

Citizen Swift 90C
Budget priced 9-pin colour with six fonts.
Rating: 70%
Reviewed: 29
Supplier: Citizen
Price: £169

Clarity 16
16-bit stereo sound sampler with adjustable volume
Rating: 70%
Reviewed: 25
Supplier: MicroDeal
Price: £149

ColourPic
Real-time colour video digitiser
Rating: 70%
Reviewed: 2
Supplier: JCL
Price: £399

ColourPic+
Real-time colour video digitiser with animation
Rating: 70%
Reviewed: 22
Supplier: JCL
Price: £699

CSA Mega Miget
33MHz 68030+FPU accelerator for the A500
Rating: 70%
Reviewed: 3,5
Supplier: Omega Projects
Price: £389

CSA Rocket Launcher
50MHz 68030+FPU accelerator for the A1500
Rating: 90%
Reviewed: 20
Supplier: Omega Projects
Price: £549

DataFlyer 2000
Hard drive card for A1500 and above
Rating: 50%
Reviewed: 1
Supplier: Trilogic
Price: £350

DCTV
Pseudo 24-bit video enhancer for all machines. 368x580 pixels
Rating: 70%
Reviewed: 12
Supplier: Silica
Price: £499

Diconix 701
PC ink-jet printer. 300 DPI, 200CPS.
Rating: 50%
Reviewed: 22
Supplier: Kodak
Price: £399

DigiTiger II
Simple colour video capture system
Rating: 70%
Reviewed: 17
Supplier: SA&H
Price: £200

Digiview IV
Simple colour video capture system
Rating: 70%
Reviewed: na
Supplier: Silica
Price: £150

Emplant
Interesting Macintosh emulator for A1500(+)
Rating: 70%
Reviewed: 28
Supplier: Blittersoft
Price: £254.95

Epson Epl4000
6PPM, 300DPI laser engine. 512K basic RAM.
Rating: 70%
Reviewed: 22
Supplier: Epson
Price: £799

Epson LQ400
Budget 24-pin monochrome printer. 121 CPS
Rating: 70%
Reviewed: 4
Supplier: Epson
Price: £269

Epson LX850
Basic 9-pin engine from Epson. Three fonts. 106 CPS
Rating: 50%
Reviewed: 4
Supplier: Epson
Price: £269

Epson SQ870
Epson's answer to the Projet. Eight fonts. 360 CPS, 360 DPI.
Rating: 70%
Reviewed: 22
Supplier: Epson
Price: £659

Epson Stylus 800
Budget ink-jet printer (it shows). 360DPI, 360 CPS.
Rating: 50%
Reviewed: 29
Supplier: Epson
Price: £295

FD Internal 2000
Internal floppy disk for large model Amigas
Rating: 70%
Reviewed: 8
Supplier: Power Computing
Price: £50

Floptical Disk
Removable optical disk for the Amiga
Rating: 90%
Reviewed: 8
Supplier: Digital Micronics
Price: £650

Frame Grabber
Real-time colour video capture system
Rating: na
Reviewed: na
Supplier: Marcam
Price: £599

Fujitsu B100
Little known ink-jet. Three fonts, 300 DPI, 160 CPS.
Rating: 70%
Reviewed: 22
Supplier: Fujitsu
Price: £349

Fujitsu B200
Improved B100. Three fonts, 300 DPI, 180 CPS.
Rating: 50%
Reviewed: 22
Supplier: Fujitsu
Price: £499

Fusion Forty
50MHz 68040+FPU accelerator for the A1500(+)
Rating: na%
Reviewed: na
Supplier: Power Computing
Price: £1999

G-Force
25MHz 68030+FPU for the A1500(+) from GVP
Rating: 70%
Reviewed: 15
Supplier: Silica
Price: £599

G-Force 030
40MHz 68030+FPU for the A1500(+) from GVP
Rating: 70%
Reviewed: 27
Supplier: Silica
Price: £699

G-Force 40
28MHz 68040+FPU for the A1500(+) from GVP
Rating: na%
Reviewed: na
Supplier: Silica
Price: £1999

GeneSys
All-singing genlock from the UK masters
Rating: 70%
Reviewed: 29
Supplier: G2 Systems
Price: £934

GenieScan
Hand-held 400DPI monochrome scanner
Rating: na%
Reviewed: na
Supplier: Datel
Price: £130

Genitizer
Entry level touch tablet. with a 9' x 6' working area
Rating: na%
Reviewed: na
Supplier: Datel
Price: £130

GI Scanner
Hand-held 400DPI monochrome scanner
Rating: 90%
Reviewed: 5
Supplier: Golden Image
Price: £150

Glare Guard
High-priced performance VDU screen filter
Rating: 70%
Reviewed: 26
Supplier: GND Distribution
Price: £86.25

GT6500
Epson's amazing 16.8 million colour 600DPI flat-bed
Rating: 90%
Reviewed: na
Supplier: Power Computing
Price: £1300

GVP DSS
GVP's 8-bit stereo sampler with volume control
Rating: 70%
Reviewed: 3
Supplier: Silica
Price: £60

GVP Impact II+
Ultimate hard disk/RAM expansion for A500(+)
Rating: 90%
Reviewed: 1,8,13
Supplier: Silica
Price: £399

GVP Impact IIHC+8
Excellent hard card for A1500+
Rating: 70%
Reviewed: 8,13
Supplier: Silica
Price: £299

GVP IV24
24-bit video card for A1500(+). 910x576 pixels
Rating: 70%
Reviewed: 12
Supplier: Silica
Price: £1799

GVP Series 2
RAM expansion card from the Amiga masters
Rating: 70%
Reviewed: 24
Supplier: Power Computing
Price: £159

Hama 290
SHVS genlock with fade and dissolve
Rating: 70%
Reviewed: 16
Supplier: Hama PVAC
Price: £749

Harlequin
24-bit video card for A1500(+). 910x576 pixels
Rating: 90%
Reviewed: 11
Supplier: ACS
Price: £1400

ICD Kickback
Keyboard switchable Kickstart ROM sharer
Rating: na
Reviewed: na
Supplier: Silica
Price: £27

Image Master
Professional genlock that does it all
Rating: na
Reviewed: na
Supplier: Neriki
Price: £1150

KCS HD2
High-performance, dual high-density floppy drive
Rating: 90%
Reviewed: 35
Supplier: Bitcon Devices
Price: £199

Kickswitch
British-made keyboard switchable Kickstart ROM sharer
Rating: na
Reviewed: na
Supplier: Omega Projects
Price: £25

M1230XA
50MHz 68030+FPU accelerator for the A1200
Rating: 70%
Reviewed: 29
Supplier: Indy Direct
Price: £299

Megamouse-400
Optomechanical mouse
Rating: 95%
Reviewed: 32
Supplier: Golden Image
Price: £14.95

Megamix Master
From the Vidi Amiga men an 8-bit stereo sound grabber.
Rating: na
Reviewed: na
Supplier: Rombo
Price: £39.95

MicroGen
Budget-priced-general purpose fade/dissolve genlock
Rating: na
Reviewed: na
Supplier: Power Computing
Price: £199

MicroSampler
Budget priced 8-bit stereo sampler
Rating: na
Reviewed: na
Supplier: Datel
Price: £25

MiniGen
The simplest genlock money can buy!
Rating: 90%
Reviewed: 31
Supplier: Lola
Price: £49.95

NEC P20
Reliable 24 pin impact engine. Eight resident fonts. 115 CPS
Rating: 70%
Reviewed: 4
Supplier: NEC
Price: £351

Nexus HC
Internal hard drive card for A1500+
Rating: 70%
Reviewed: 8,13
Supplier: Power Computing
Price: £350

Novia 30i
Internal IDE hard disk for A500(+)
Rating: 50%
Reviewed: 8
Supplier: Power Computing
Price: £399

Octagon-2008
SCSI controller for A2000/3000/4000
Supplier: Golden Image
Price: £129.00

Oki ML380
Tough, office-type printer. 24 pin. 127 CPS. Three resident fonts.
Rating: 70%
Reviewed: 4
Supplier: Oki
Price: £386

Oki OL400
4PPM, 300DPI LED page printer. Reliable, low-cost. 512K RAM.
Rating: 90%
Reviewed: 22
Supplier: Oki
Price: £549

Opal Vision
24-Bit video card for A1500(+). 768x580 pixels
Rating: 90%
Reviewed: 20
Supplier: Silica
Price: £899

Optomouse
High-resolution optical mouse with no ball
Rating: 70%
Reviewed: 28
Supplier: Gasteiner
Price: £14.95

PC Dual Drive
Double-decker external floppy disk for all Amigas
Rating: 70%
Reviewed: 0,8
Supplier: Power Computing
Price: £120

PC501
Internal RAM expansion for the A500
Rating: 70%
Reviewed: 24
Supplier: Power Computing
Price: £30

PC501+
1Mb internal RAM expansion for the A500+
Rating: 90%
Reviewed: 24
Supplier: Power Computing
Price: £36

PC601
Internal RAM expansion for the A600
Rating: 90%
Reviewed: 24
Supplier: Power Computing
Price: £40

PC880B
Popular external floppy disk for all Amigas
Rating: 90%
Reviewed: 8
Supplier: Power Computing
Price: £55

Power 8Mb
External RAM expansion for the A500(+)
Rating: 90%
Reviewed: 24
Supplier: Power Computing
Price: £109

Power Scanner II
Hand-held 400DPI monochrome scanner
Rating: 90%
Reviewed: 14
Supplier: Power Computing
Price: £99

PowerScan Colour
Hand-held 400DPI 256 colour scanner
Rating: 50%
Reviewed: 23
Supplier: Power Computing
Price: £239

Prima
Internal IDE hard disk for A500(+)
Rating: 70%
Reviewed: 8
Supplier: Power Computing
Price: £499

Primera Printer
Photorealisic colour printer
Rating: 93%
Reviewed: 37
Supplier: Power Computing
Price: £649

Pro Agnus
2Mb Agnus CHIP for A500/A2000
Rating: 70%
Reviewed: 24
Supplier: WTS Electronics
Price: £139

Pro RAM 601
Internal 512K RAM expansion for the A600
Rating: 90%
Reviewed: 24
Supplier: WTS Electronics
Price: £38

Pro RAM Plus
Internal 512K RAM expansion for the A500
Rating: 50%
Reviewed: 8
Supplier: Datel
Price: £25

ProGen
Simple genlock
Rating: na%
Reviewed: na
Supplier: Gordon Harwood
Price: £130

RAM Master II
1.5Mb RAM internal expansion for the A500
Rating: na%
Reviewed: na
Supplier: Datel
Price: £100

Real-time Clock
Essential battery-backed up clock system for A1200 machine
Rating: 70%
Reviewed:
Supplier: First Choice
Price: £17.99

Rembrant
24-bit video card for A1500(+). 1024x1024 pixels
Rating: 70%
Reviewed: 13
Supplier: Power Computing
Price: £1499

Rendale 8802FMC
Very simple but effective genlock
Rating: 90%
Reviewed: 31
Supplier: Marcam
Price: £178

Retina
24-bit video card for A1500(+). 2400x 1200 pixels
Rating: 70%
Reviewed: 27
Supplier: ACS
Price: £345

RF542C
Unique 5.25' external floppy drive from Roctec
Rating: 70%
Reviewed: 0,8
Supplier: Silica
Price: £80

Ricoh LP1200
6PPM, 40o DPI laser engine with 2Mb basic RAM.
Rating: 90%
Reviewed: 22
Supplier: Silica
Price: £820

Roc Key
Genlock add-on (chromakey) for the RocGen Plus.
Rating: 70%
Reviewed: 19
Supplier: Silica
Price: £350

RocGen
Simple genlock with fader
Rating: 70%
Reviewed: 8
Supplier: Silica
Price: £117

RocGen Plus
Simple genlock with fade and dissolve. Noisy
Rating: 70%
Reviewed: 10
Supplier: Silica
Price: £199

Roclite
Sexy little slimline floppy drive for all Amigas
Rating: 90%
Reviewed: 8
Supplier: Silica
Price: £60

Sample Studio 2
8-bit stereo sampler
Rating: na%
Reviewed: na
Supplier: Datel
Price: £70

Sharp JX100
Hand-held 200DPI colour scanner
Rating: na
Reviewed: na
Supplier: Silica
Price: £695

Sharp JX300
300DPI colour flat-bed scanner
Rating: na
Reviewed: na
Supplier: Silica
Price: £3600

Sound Enhancer
Bass and treble boost control for Amiga sound.
Rating: na
Reviewed: na
Supplier: Omega Projects
Price: £40

Sound Trap 3
Tiny, if basic, monophonic 8-bit sound sampler
Rating: 70%
Reviewed: 3
Supplier: Omega Projects
Price: £30

Star Laser 4
4PPM, 300 DPI laser. 1M basic RAM.
Rating: 70%
Reviewed: 22
Supplier: Star
Price: £1173

Star LC200-24
Colour/monochrome impact. Four resident fonts. 91 CPS
Rating: 70%
Reviewed: 4
Supplier: Star
Price: £304

Stereo Master
Budget-priced 8-bit stereo sound sampler with volume control
Rating: 70%
Reviewed: 11
Supplier: HiSoft
Price: £40

Stereo sampler 2
8-bit stereo sound sampler with volume control
Rating: na
Reviewed: na
Supplier: Trilogic
Price: £40

Supra 500XP
External hard drive/RAM expansion for A500(+)
Rating: 70%
Reviewed: 1,8,13
Supplier: WTS Electronics
Price: £489

SyQuest Tape Backup
SCSI tape streamer for Amigas with SCSI port
Rating: 50%
Reviewed: 8
Supplier: Omega Projects
Price: £600

Toshiba CD-ROM
CD-ROM for Amigas with.SCSI ports
Rating: 70%
Reviewed: 27
Supplier: Alamthera System
Price: £499

V-Lab
Real-time colour video capture system
Rating: 70%
Reviewed: 17
Supplier: ACS
Price: £300

S-VHS VideoCenter
The original, low-end VideoCenter – the VC1.
Supplier: G2 Systems
Price: £581.63

VideoCenter 2
Well-endowed genlock from the British SVHS masters
Rating: na
Reviewed: na
Supplier: G2 Systems
Price: £1170

VideoCenter 3
High-performance suite from the masters
Rating: 70%
Reviewed: 7
Supplier: G2 Systems
Price: £1999.99

Video Master
Budget real-time video capture system with colour facility
Rating: 70%
Reviewed: 25
Supplier: MicroDeal
Price: £69.95

Videocomp G100
High cost, high performance genlock system
Rating: 90%
Reviewed: 3
Supplier: Silica
Price: £1800

VideoDigitiser
Real-time video capture system with colour facility
Rating: na
Reviewed: na
Supplier: Datel
Price: £80

VideoMaster VM 2
Expensive, high-performance SHVS genlock
Rating: 50%
Reviewed: 1
Supplier: Power Computing
Price: £799

Videon
Colour video capture system.
Rating: na
Reviewed: na
Supplier: Power Computing
Price: £200

Vidi Amiga 12 AGA
Popular and powerful budget priced video digitiser
Rating: 90%
Reviewed: 22
Supplier: Rombo
Price: £99.95

Vidi Amiga 12RT AGA
Real-time 12-bit video digitiser
Rating: 80%
Reviewed: 36
Supplier: Rombo
Price: £199.99

Vidi Amiga 24RT AGA
Real-time 24-bit video digitiser
Rating: 80%
Reviewed: 36
Supplier: Rombo
Price: £299.95

VXL30
25MHz 68030+FPU internal accelerator for the A500
Rating: na
Reviewed: na
Supplier: Indi Direct
Price: £409

WordSync 2000
Hard disk card for A1500+
Rating: 70%
Reviewed: 1,13
Supplier: WTS Electronics
Price: £450

Software

AccuTrans 3D
Converts 3D objects
Rating: 70%
Reviewed: 33
Supplier: Micromouse
Price: £39.29

ADPTools Professional
Remote control for ASDG's Art Department Pro
Rating: 70%
Reviewed: 35
Supplier: White Night
Price: £125

Advantage
One of the best all-round Amiga spreadsheets
Rating: 70%
Reviewed: 1,9
Supplier: Silica
Price: £100

Aladdin 4D
Amazing ray-traced rendering package
Rating: 93
Reviewed: 38
Supplier: Hobbyte
Price: £213

Alternative Scroller
Video titling system
Rating: na
Reviewed: na
Supplier: Alternative Image
Price: £50

Ami-Back
Very popular hard disk backup system
Rating: 70%
Reviewed: 29
Supplier: Omega Projects
Price: £69.99

AmiBase 4
Simple flat-file database
Rating: 70%
Reviewed: 36
Supplier: One Vision Software
Price: £15

AmigaVision
Hypercard-like engine
Rating: na
Reviewed: na
Supplier: Commodore
Price: £80

AMOS
BASIC programming language with many extensions
Rating: 90%
Reviewed: 3,9
Supplier: Europress
Price: £50

AMOS 3D
3d-extension for AMOS BASIC
Rating: 90%
Reviewed: 5,7
Supplier: Europress
Price: £30

AMOS Compiler
Compiler for AMOS BASIC
Rating: 70%
Reviewed: 5,9
Supplier: Europress
Price: £30

AMOS Pro Compiler
Compiler extension for AMOS BASIC
Rating: 70%
Reviewed: 30
Supplier: Europress
Price: £34.95

AMOS Professional
Bigger, more powerful version of AMOS
Rating: 90%
Reviewed: 20
Supplier: Europress
Price: £69.95

AntIA
Font enhancement utility
Rating: 70%
Reviewed: 8
Supplier: Zen
Price: £40

Art Department Professional
Latest version of famous image processor
Rating: 84%
Reviewed: 37
Supplier: First Computer Center
Price: £149.95

Art Expression
Structured (object oriented) drawing package
Rating: 70%
Reviewed: 24
Supplier: Silica
Price: £150

Bars and Pipes Pro 2
Very powerful music and multimedia engine
Rating: 80%
Reviewed: 31
Supplier: Meridian
Price: £299.99

Brilliance
The Amiga's first real paint program for years. A classic.
Rating: 95%
Reviewed: 38
Supplier: Meridian
Price: £199.95

Broadcast Titler
Video titling system
Rating: 70%
Reviewed: 2
Supplier: Meridian
Price: £327.27

Caligari 24
Power drawing at a budget price
Rating: 50%
Reviewed: 33
Supplier: Amiga Centre Scotland
Price: £99.95

CanDO 2.51
Hypercard-like applications generator.
Rating: 70%
Reviewed: 33
Supplier: INOVAtronics
Price: £149.95

CMPanion
Patch editor for MIDI
Rating: 70%
Reviewed: 6
Supplier: Gajits
Price: £100

Count and Add
Maths
Rating: 70%
Reviewed: 10
Supplier: Lander Software
Price: £26

Cygnus ED 3
One of the best pure text editors around. A programmer's tool
Rating: 90%
Reviewed: 33
Supplier: Silica
Price: £79.95

Deluxe Paint 4
AGA version available.
Rating: 80%
Reviewed: 10
Supplier: Electronic Arts
Price: £90

Devpac 3
The ultimate assembly language development tool
Rating: 90%
Reviewed: 10,12
Supplier: HiSoft
Price: £70

Directory Opus 4
Super-powerful graphical window on AmigaDOS
Rating: 90%
Reviewed: 28
Supplier: Silica
Price: £64.95

Disney Animation Studio
Animation program from the masters.
Rating: 70%
Reviewed: 1
Supplier: Silica
Price: £80

Easy AMOS
Stripped down version of AMOS BASIC with debugger
Rating: 90%
Reviewed: 12
Supplier: Europress
Price: £35

Elan Performer 2
Video presentation system
Rating: 70%
Reviewed: 11
Supplier: Silica
Price: £180

Essence II
Specially generated textures
Rating: 90%
Reviewed: 32
Supplier: Alternative Image
Price: £100

Final Copy 2
Upgrade to the hugely successful Final Copy
Rating: 70%
Reviewed: 25
Supplier: Gordon Harwood
Price: £79.95

Final Writer
Upgrade to Final Copy 2
Rating: 90%
Reviewed: 33
Supplier: Gordon Harwood
Price: £129.95

Fun School 3
3 R's software with fun graphics
Rating: 90%
Reviewed: 2
Supplier: Europress
Price: £25

Fun School 4
3 R's software with fun graphics
Rating: 90%
Reviewed: 9
Supplier: Europress
Price: £25

GB Route Edit
Editor for users of GB Route Plus
Rating: 80%
Reviewed: 10
Supplier: Complex Computers
Price: £30

GB Route Plus
Automated route planning for UK drivers
Rating: 90%
Reviewed: 10
Supplier: Complex Computers
Price: £80

GigaMem
Virtual memory for big Amigas with bigger hard disks
Rating: 90%
Reviewed: 33
Supplier: Gasteiner
Price: £69.95

HiSoft BASIC
Under-rated version of the BASIC language. Internal compiler
Rating: 70%
Reviewed: 9
Supplier: HiSoft
Price: £50

HiSpeed Pascal
Interesting implementation of Pascal from the language masters
Rating: 70%
Reviewed: 19
Supplier: HiSoft
Price: £100

Home Office 2
Superb integrated office suite from Gold Disk
Rating: 90%
Reviewed: 20
Supplier: Silica
Price: £99.99

Hyperbook
Another Hypercard clone
Rating: 70%
Reviewed: 6
Supplier: Silica
Price: £100

Image Master
Powerful image processing system
Rating: 90%
Reviewed: 18
Supplier: Amiga Centre Scotland
Price: £175

ImageFX
Rival to Art Department
Rating: 70%
Reviewed: 27
Supplier: Silica
Price: £269.95

Imagine 2
Powerful 3D modelling system
Rating: 70%
Reviewed: 14
Supplier: Silica
Price: £270

K-Spread 4
Power spreadsheet with GEM-like interface
Rating: 70%
Reviewed: 9

Supplier: HiSoft
Price: £150

Lattice C v5
The most popular commercial C compiler
Rating: 90%
Reviewed: 3,9
Supplier: HiSoft
Price: £230

Let's Spell
Writing
Rating: 70%
Reviewed: 2
Supplier: Softstuff
Price: £20

M2 Amiga
Amiga implementation of Wirth's Modula-2
Rating: 70%
Reviewed: 7,9
Supplier: Real-Time Associates
Price: £125

MakePath
Automatic path generator add-on for VistaPro
Rating: 70%
Reviewed: 23
Supplier: Meridian
Price: £24.95

Map Master
Image mapping system
Rating: 70%
Reviewed: 14
Supplier: Alternative Image
Price: £54

MediaPoint
High-end presentation authoring system like Scala
Rating: 91%
Reviewed: 37
Supplier: Meridian
Price: £329.99

Micro French
Learn franglais by computer
Rating: 70%
Reviewed: 17
Supplier: LCL
Price: £24

Mini Office 2
Integrated suite of office software
Rating: 60%
Reviewed: 17
Supplier: Europress Software
Price: £59.95

Moviesetter
Basic cartoon animation package from Gold Disk.
Rating: 70%
Reviewed: 14,23
Supplier: Silica
Price: £59.95

Music-X
Popular midi sequencing software
Rating: 70%
Reviewed: na
Supplier: MicroIllusions
Price: £150

Music-X Jnr.
Budget version of Music-X
Rating: 70%
Reviewed: na
Supplier: MicroIllusions
Price: £50

Nexus Backdrops
Backdrops for specialised video use
Rating: 50%
Reviewed: 29
Supplier: Video World
Price: £29.95

Noddy's Big Adventure
13 educational games featuring Noddy. Stage 1 Nat. Cir.
Rating: 90%
Reviewed: 35
Supplier: The Jumping Bean Company
Price: £24.99

OCR
Optical Character Recognition
Rating: 95%
Reviewed: 19
Supplier: Golden Image
Price: £49.95

OctaMed Companion
Tutorial for OctaMED Pro VB5
Rating: 90%
Reviewed: 29
Supplier: SeaSoft Computing
Price: £16.99

OctaMed Professional V5
Very powerful and hugely popular music/midi editor
Rating: 90%
Reviewed: 29
Supplier: SeaSoft Computing
Price: £30.50

PageStream 2.2
Inexpensive page layout program with Postscript
Rating: 50%
Reviewed: 2,3
Supplier: Meridian
Price: £69.95

Pen Pal
Fun word processor with integral database
Rating: 70%
Reviewed: 6,9,25
Supplier: Gordon Harwood
Price: £49.95

Pepe's Garden
The 3 Rs
Rating: 70%
Reviewed: 10
Supplier: Prisma
Price: £25.99

Personal Fonts Maker 2
256 colour font construction utility from Cloanto
Rating: 70%
Reviewed: 36
Supplier: Meridian
Price: £59.95

Personal Paint 4.0
Latest version of Cloanto's DPaint rival
Rating: 75%
Reviewed: 37
Supplier: Meridian
Price: £59.95

Picture Book
The 3 Rs
Rating: 90%
Reviewed: 10
Supplier: Triple R Education
Price: £20

PowerBase 3.34
Simple flat-file database
Rating: 70%
Reviewed: 30
Supplier: Amivision
Price: £14.95

Powerwaves 3.1
Makes 3D wave based objects
Rating: 70%
Reviewed: 21
Supplier: Database Software
Price: £17.95

Pro Draw 3.0
Structured drawing compliment to Pro Page
Rating: 90%
Reviewed: 27
Supplier: Silica
Price: £132

Pro Page 4
Big, well-respected page layout from Gold Disk
Rating: 90%
Reviewed: 27
Supplier: Silica
Price: £199.95

Professional Calc
Major upgrade of Advantage with many more features
Rating: 90%
Reviewed: na
Supplier: Silica
Price: £150

Protext V6
Latest version of Arnor's power word processor
Rating: 80%
Reviewed: 35
Supplier: Arnor
Price: £99

Quarterback 6.0
Latest version of popular HD backup utility
Rating: 82%
Reviewed: 37
Supplier: Meridian
Price: £74.95

Quarterback Tools Deluxe
Collection of disk utilities
Rating: 90%
Reviewed: 31
Supplier: Meridian
Price: £129.95

Real 3D 2
Clever surface texture modelling in a class of its own.
Rating: 80%
Reviewed: 31
Supplier: Alternative Image
Price: £469

Resource
Disassembles binary to macro assembly language
Rating: 90%
Reviewed: 33
Supplier: Helios
Price: £130

Scala EE100
Semi-pro editing for LANC equipped gear
Rating: na
Reviewed: 36
Supplier: Scala UK
Price: £149

Scala MM300
Costly, all-singing, all-dancing video FX generator
Rating: 90%
Reviewed: 36
Supplier: Scala UK
Price: £329

Sculpt 4D
A genuine classic of ray-tracers.
Rating: 90%
Reviewed: 7
Supplier: Alternative Image
Price: £400

Smooth Talker
Video prompting system
Rating: 70%
Reviewed: 16
Supplier: Zen Computers
Price: £140

Spellbound
Writing for little ones
Rating: 70%
Reviewed: 6
Supplier: Lander Software
Price: £26

Spellcopter
Spelling
Rating: 70%
Reviewed: 6
Supplier: ESP Software
Price: £20

Studio
All-singing printer driver
Rating: 90%
Reviewed: 33
Supplier: JAM
Price: £49.95

Superbase Personal 2
Very powerful programmable relational database with forms
Rating: 70%
Reviewed: 9,12
Supplier: Oxxi
Price: £100

Superbase Pro 4
Very powerful programmable relational database with forms
Rating: 90%
Reviewed: 4,9
Supplier: Oxxi
Price: £400

SuperJam!
Music generation by computer
Rating: 70%
Reviewed: 15
Supplier: Blue Ribbon Sound
Price: £100

Surface Master
Another gribbly surface generator for Imagine
Rating: 70%
Reviewed: 14
Supplier: Alternative Image
Price: £28

Technosound Turbo 2
Sample editor
Rating: 70%
Reviewed: 30
Supplier: New Dimensions
Price: £39.99

Terraform
Edits landsape.DEM files for VistaPro
Rating: 70%
Reviewed: 26
Supplier: Meridian
Price: £34.99

The French Mistress
French language tutor for all
Rating: 70%
Reviewed: 4
Supplier: Kosmos
Price: £20

Touch Typist
Computer aided course in touch typing
Rating: 70%
Reviewed: 15
Supplier: Sector Software
Price: £14

TrapFAX
FAX software for high-speed modems
Rating: 80%
Reviewed: 36
Supplier: Blittersoft
Price: 74.95

Turbo Print Pro
Enhanced printing utility
Rating: 70%
Reviewed: 14,15
Supplier: Meridian
Price: £49.95

TypeSmith 2
Scalable font utility
Rating: 90%
Reviewed: 36
Supplier: Meridian
Price: £135

Upper Disk Tools
Disk recovery tools
Rating: 81%
Reviewed: 37
Supplier: Wheelbarrow Software
Price: 19.95

VistaPro
Real-world landscape generator
Rating: 90%
Reviewed: 7
Supplier: Meridian
Price: £100

VTClock
Video-type clock overlay for video use
Rating: 90%
Reviewed: 35
Supplier: Zen Computers
Price: £35.25

Wordworth 2 AGA
Improved version of Wordworth
Rating: 80%
Reviewed: 33
Supplier: Digita
Price: £129.95

Wordworth 3.0
Latest version of Digita's high-power word processor
Rating: 65%
Reviewed: 37
Supplier: Digita
Price: £149.95

Supplier's list

For information on the libraries supplying pulbic domain and shareware, check out our full listing on page 90.

Accolade	071 738 1391
ACL	0933 650677
Almathera	081 687 0040
Alternative Image	0533 440041
Amiga Centre Scotland	089 687583
Arnor	0733 68909
Blitter Soft	0908 220196
Calculus	0543 418666
Cloudhall	0604 231211
Commodore	0628 770088
Complex Computers	0706 224531
Coombe Valley	0626 779695
Digita	0395 270273
Electronic Arts	0753 549442
Entertaiment Int.	081 343 9143
ESP	0702 600557
Europress	0625 859333
Expressworks	0252 726255
Gajits	061 236 2515
Gasteiner	081 345 6000
GND	071 515 0100
Gordon Harwood	0773 836781
HiSoft	0525 718181
Indi Direct	0543 419999
Kosmos Software	0525 873942
Lander Software	041 357 1659
Lola Electronics	0858 880182
Marcam	0604 790466
MCM	081 963 0663
Meridian	081 543 3500
MicroIllusions	0480 496497
New Dimensions	0291 690933
Oki Printers	0753 819819
Omega Projects	0942 682206
Power Computing	0234 273000
Prisma Software	0244 362244
Real Time Associates	081 6567333
Rombo	0506 414631
Scala UK	0920 444294
SeaSoft Computing	0903 850378
Silica	081 309 1111
Siren Software	061 474 7572
Star	0494 471111
The Jumping Bean Company	0602 792838
Trilogic	0274 678062
Tripple 'R' Software	0742 780370
White Knight Technologies	0992 714539
Zen Computer Services	061 793 1931

AMIGA SHOPPER
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Your guide to safer AMIGA Shopping

Getting confused in the alluring shopping jungle is easy. Amiga Shopper leads the way to a better buy.

Colourful adverts tempt you with amazing pieces of equipment and software for your Amiga. They are faster, bigger, better and you are just dying to get your hands on them. Your first step to avoid dishonest businesses (thankfully they are a small minority, but all it takes is one!) and ultimately disappointment on your behalf, is to read our Safe Shopping advice. Follow a few simple steps and the Amiga kit of your dreams will safely be yours.

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that everything works properly.
- Make sure you have all the necessary leads, manuals or other accessories you should have.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as you possibly can when stating what you want to buy and make absolutely sure you confirm all the technical details. Things to bear in mind are: version numbers, memory requirements, other hardware or software required, and compatibility with your Amiga (be sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.
- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and the name of the person you are ordering from.

BUYING BY POST

- You must remember to clearly state exactly what you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up that will reduce the risk of hiccups.
- Make sure you keep copies of all correspondence.

MAKING RETURNS

You are entitled to return a product if it fails to meet one of the following criteria:

1. The goods must be of 'merchantable quality.'
2. They must be "as described".
3. They must be fit for the purpose for which they were sold, or for the purpose you specified when ordering.

If they fail to satisfy any or all of the criteria, then you are entitled to:

- Return them for a refund.
- Receive compensation for part of the value.
- Get a replacement or free repair.
- When returning a product, ensure you have proof of purchase and that you return the item as soon as possible after receiving it. That's why it is important to check it thoroughly as soon as it is delivered.

GETTING REPAIRS

- Always check the conditions of the guarantee, and servicing and replacement policy.
- Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions in the guarantee.

BUYING PD

- Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.
- Shopping around is still important when buying PD because different sources charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are meant to be non-profit-making operations. AS

Buying by Mail – Ten Steps to Safety

When you're buying from any mail order company, it's worth following *Amiga Shopper's* useful guidelines to avoid confusion and disappointment:

1.) Before you send any money, ring the supplier to make sure the item you require is in stock. Ask questions about the company's policy on delivery and returns of faulty equipment. Make sure that there are no hidden costs such as postage and packaging. Find out when you can *realistically* expect to receive your goods.

2.) Always read the small print in adverts. This is normally where the unpleasant surprises are hidden

3.) Beware companies that do not include their address on their adverts. Also, avoid companies which do not answer or return your calls.

4.) By far the best method of payment is by credit card. If ordering goods of more than £100 in total value, remember that you are legally entitled to claim compensation from some credit companies if the retailer goes bust. Check your credit card company's policy carefully. You can also try to get extra insurance in advance.

5.) If you're not paying by credit card, pay by cheque. Never send cash, and avoid using postal orders.

6.) Keep records. If you are buying by credit card keep a note of the time of the order and ask for an order number. When ordering anything over the telephone, always double-check the price.

7.) When sending a cheque keep a note of the cheque number, the date and the exact value. Make sure you know the exact name of the mail order company.

8.) When you receive your goods, check them carefully. If anything is missing or faulty, contact the supplier immediately.

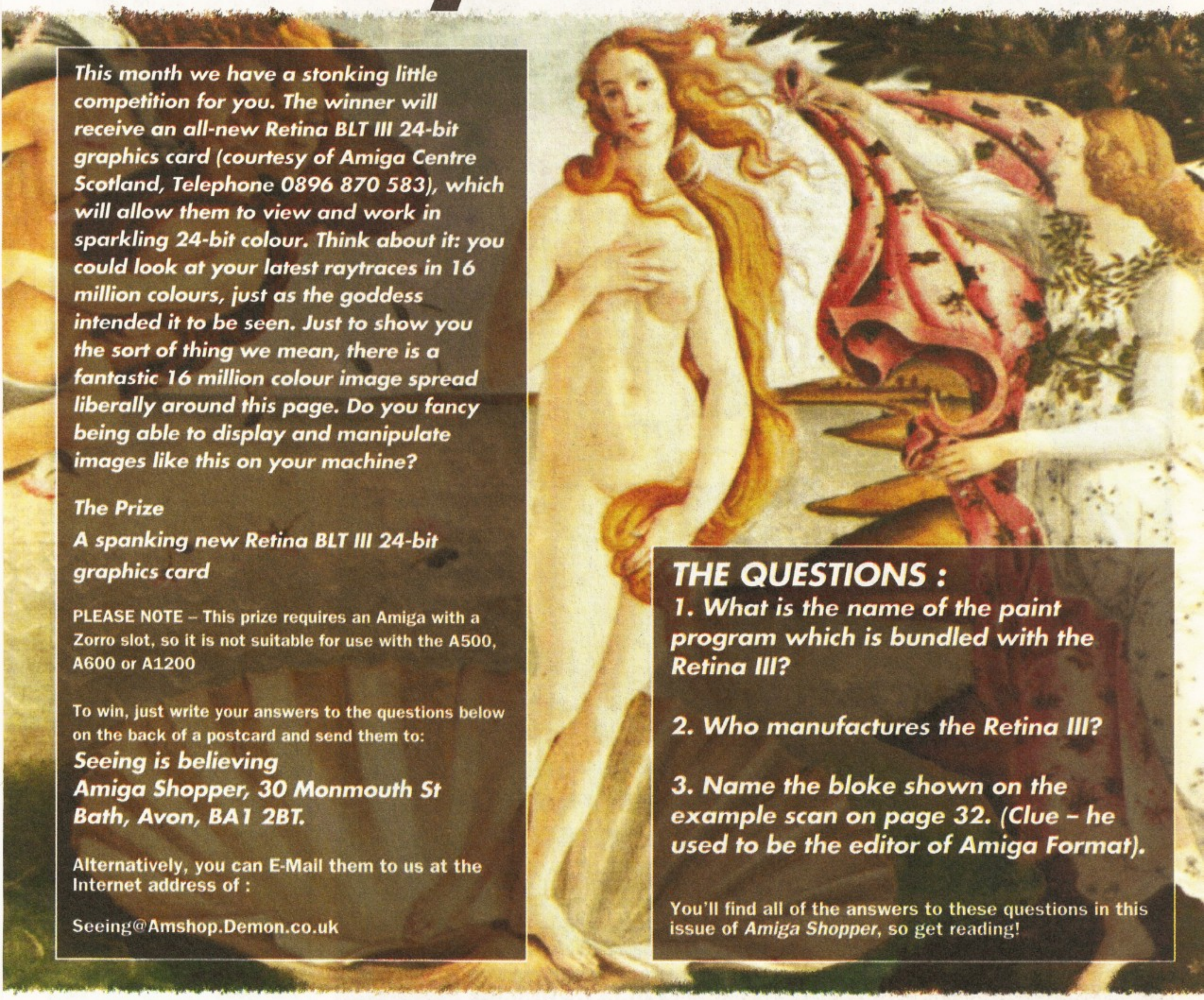
9.) Always order from the most recent issue of *Amiga Shopper*.

10.) If a problem does arise, contact the supplier in the first instance. Calmly and politely tell them your problem. Most problems turn out to be minor hitches or misunderstandings that can easily be resolved. If you think you have a genuine grievance, contact your local Trading Standards Officer. The number is in the phone book.

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Win a clearer view on your work



This month we have a stonking little competition for you. The winner will receive an all-new Retina BLT III 24-bit graphics card (courtesy of Amiga Centre Scotland, Telephone 0896 870 583), which will allow them to view and work in sparkling 24-bit colour. Think about it: you could look at your latest raytraces in 16 million colours, just as the goddess intended it to be seen. Just to show you the sort of thing we mean, there is a fantastic 16 million colour image spread liberally around this page. Do you fancy being able to display and manipulate images like this on your machine?

The Prize

A spanking new Retina BLT III 24-bit graphics card

PLEASE NOTE – This prize requires an Amiga with a Zorro slot, so it is not suitable for use with the A500, A600 or A1200

To win, just write your answers to the questions below on the back of a postcard and send them to:

Seeing is believing
Amiga Shopper, 30 Monmouth St
Bath, Avon, BA1 2BT.

Alternatively, you can E-Mail them to us at the Internet address of :

Seeing@Amshop.Demon.co.uk

THE QUESTIONS :

1. What is the name of the paint program which is bundled with the Retina III?

2. Who manufactures the Retina III?

3. Name the bloke shown on the example scan on page 32. (Clue – he used to be the editor of Amiga Format).

You'll find all of the answers to these questions in this issue of *Amiga Shopper*, so get reading!

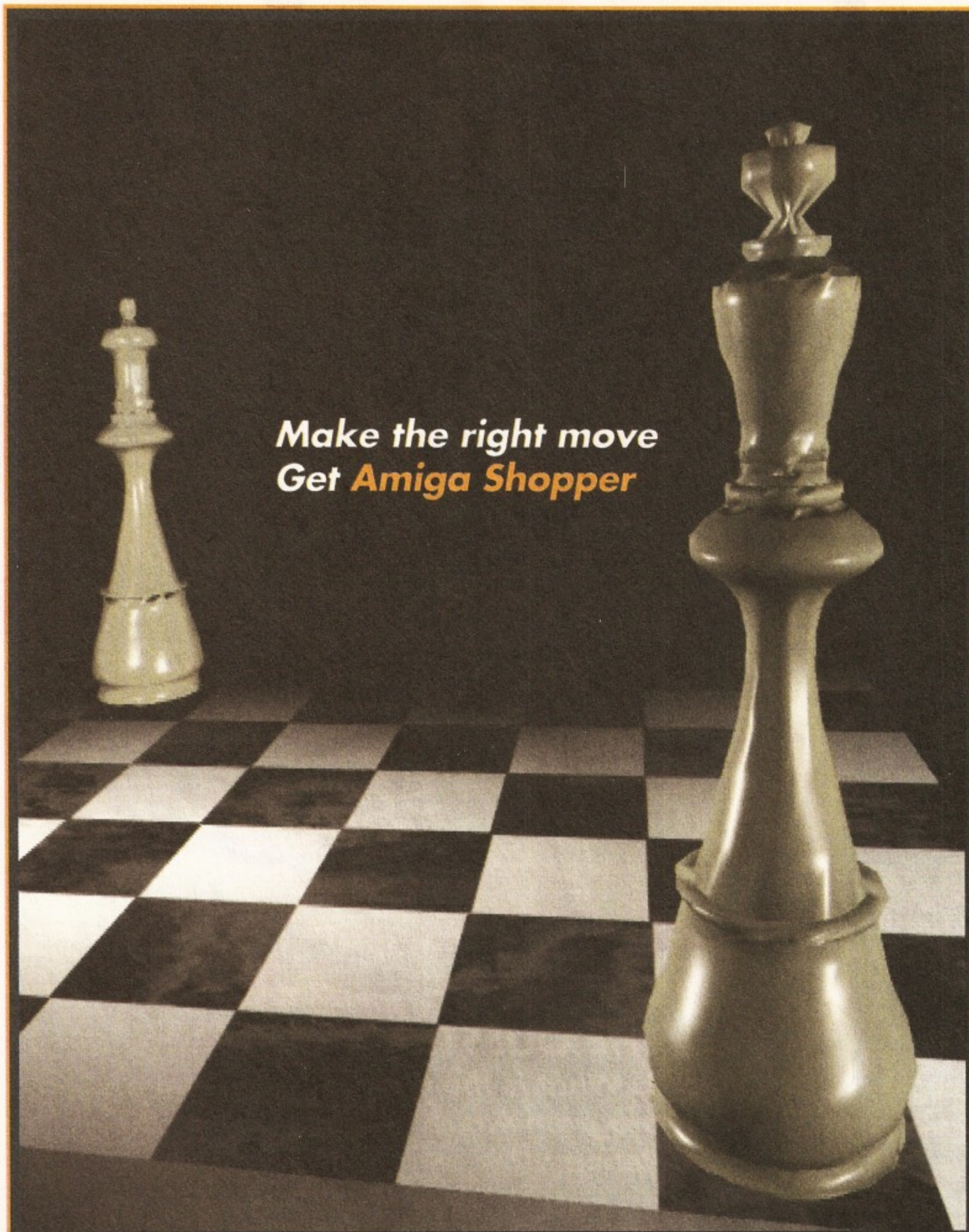
FINAL WRITERS

In order to ensure a completely random draw for our *Final Writer* competition, we asked some bloke who was in our office wiring some cables to draw the winners of our stonking *The Write Stuff* competition. He drew the following names out of the hat:

K Hart of Wakefield
R A Stewart of Darlington
Adrian Joice of Beverley
Martyn LeButt of London
J J Corbett of Brentwood
Mark Taylor of Edinborough
B Kelley of Derby
Simon Etchells of Edinburgh.
G Ellis of Pontplyddyn
James Martin of Glasgow
M A McCarthy of Fareham
Paul Hibbit of Wellingborough
James Heneghan of Billericay
David Spence of Belfast

Congratulations all round! You will be receiving copies of *Final Writer* direct from Softwood in the near future!

Comms and Chess!



Next month's Amiga Shopper will include a 64 page guide to Comms. Not sure what a Baud rate is? Look no further! Plus the first installment in a series on how to write your own chess program.

On sale Tuesday 6th September. £2.95

DEAR NEWSAGENT, Please reserve/deliver me a copy of *Amiga Shopper* every month, beginning with the August issue, which goes on sale on Tuesday 5 July.

Name ____________________

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• NOTE TO NEWSAGENT: *Amiga Shopper* is published by Future Publishing (0225 442244) and is available from your local wholesaler.

BE SURE TO AVOID DISAPPOINTMENT – RESERVE YOUR FAVOURITE MAGAZINE AT YOUR LOCAL NEWSAGENT NOW!

• PS Oh, and if you do have any problems getting hold of your favourite Amiga mag, call Kate Elston on 0225 442244 and she'll help you out.

AT-A-GLANCE GUIDE

To help you find what you want quickly, here is a cross-referenced list of everything covered in this month's Amiga Shopper. You'll find a detailed index to the problem-solving Amiga Answers section on page 44. The page numbers given are for the first page of the article in which the subject is mentioned.

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Are there any products or subjects you'd like us to take a look at? Well, just drop a line to: *Amiga Shopper*, 30 Monmouth Street, Bath, Avon BA1 2BW.

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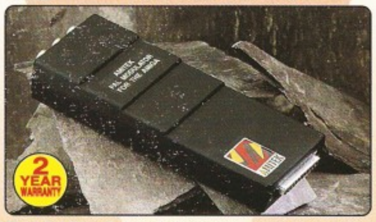
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AMITEK FOR AMIGA 600/1200 - 2YR WARRANTY

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AMITEK FOR THE AMIGA 1200

1Mb, 2Mb, 4Mb & 8Mb RAM versions available with or without Floating Point Unit

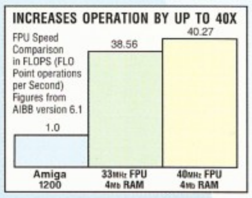
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BUILT-IN BATTERY BACKED CLOCK

Maximise the processing power of your standard A1200. Be ready for the new generation of software which makes more demands on Amiga memory and technology. The AmiTek Hawk RAM expansion includes up to 8Mb fast 32-bit RAM, the ability to support a sophisticated 68882 FPU (Floating Point Unit - drastically increases the speed of maths intensive operations) and a battery backed up clock. Built to a high standard, this board can be easily installed and comes with a 2 year warranty. The Hawk RAM board is available in 9 pre-configured versions enabling you to select the model which best suits your requirements.

INCREASES OPERATION BY UP TO 40X



- Plugs straight into A1200 trapdoor - No soldering required
- Upgradeable FAST RAM board to 1, 2, 4 or 8Mb
- Uses industry standard socketed SIMMs for easy upgrades
- Two types of optional Floating Point Unit - 33MHz or 40MHz PLCC 68882 co-processor
- Comprehensive manual with illustrations
- Works with all A1200 and A1200HD computers
- Does not invalidate your A1200 warranty
- 2 year warranty

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AMITEK FOR AMIGA 500/500PLUS & AMIGA 600/1200

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The packs feature a high quality internal 1Mb 3½" drive mechanism for the Amiga 500/500PLUS or Amiga 600/1200. All you need to fit your drive is included, plus easy to follow fitting instructions and 24 months warranty.



2 YEAR WARRANTY

A500/A500PLUS INTERNAL DRIVE **£44** INC VAT - DRI 3600

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1Mb SONY 3½" DELUXE FLOPPY DRIVE

AMITEK FOR ALL AMIGA COMPUTERS



'Amitek's new disk drive combines an elegant design, high build quality and smooth performance in a very affordable package. Highly recommended'. Jason Holborn - Leading Amiga Journalist

DELUXE FEATURES

The AmiTek drive has been specially designed to meet the needs of Amiga users and has many deluxe features which are not included in other drives - check out the competition!

ANTI-CLICK

The anti-click feature stops your drive from making lengthy whirs and clicks that occur when the drive is empty and searching for a disk.

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AmiTek took the time to source a mechanism that has all the features, quality and reliability that Amiga owners have been crying out for. After vigorously testing Sony's mechanism, it proved to be the best by far available.

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CUMANA	–	–	–	–	–	–
ZAPPO	–	–	✓	–	–	–

- High Quality 3½" Sony Mechanism
- Strong Metal Casing
- Built-In Anti-Click Feature
- Switchable Anti-Virus Mode
- Enable/Disable Switch
- 75ms Access time
- Daisy Chainable Via Thru Port
- Low Power Usage
- No Need For External PSU
- 2 Year Warranty

EXTERNAL DRIVE **£59** INC VAT - DRI 1159

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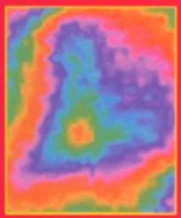
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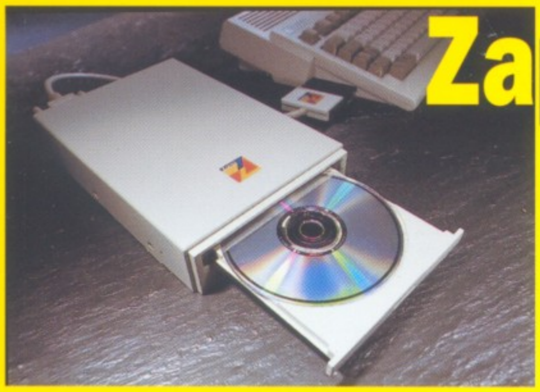
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Page 10 Which 24-bit graphics card could bring your work to life? John Kennedy gets into 16 million colours in our comprehensive round-up.



Page 20 Is Imagine 3 the Holy Grail of Amiga Raytracing? Read our in-depth review, plus opinions from professional animators and 3D hints and tips.





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CD1200 killer?
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Page 44 10 Pages of your Amiga heartaches healed. Rest your head on our expert panel's shoulder and tell them all about it.



Page 16 Toby Simpson shows you how to debug your programs. Let this demi-god of programming show you how the professionals do it.



